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OF THE

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SESSION 1914

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No. 33 The Fruits of Ontario. Presented to the Legislature, April 9th, 1914. *Printed.*

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No. 55 Copies of Orders-in-Council and Regulations under section 27 of the Department of Education Act. Presented to the Legislature, February 25th, 1914. *Printed.*

No. 56 Bulletin of the Ontario Hospitals for the Insane. Presented to the Legislature, February 27th, 1914. *Printed.*

No. 57 Regulations respecting Rondeau Provincial Park, 1913. Presented to the Legislature, February 27th, 1914. *Printed.*

No. 58 Return to an Order of the House of the 27th March, 1913, for a Return showing:—1. Copies of all correspondence between the Minister of Public Works or any other member of the Government or any official thereof, and any person or persons relating to the floods on the Grand River or any other river in the Province during the years 1908, 1909, 1910, 1911, 1912. 2. Copies of all petitions received during the said years by the Government or any Minister of the Government from any person or persons relating to the floods on the Grand River or any other river in the Province, or requesting the Government to take action towards the prevention of floods. 3. Copies of all reports made by any engineer or engineers employed on behalf of the Government or on behalf of the Hydro-Electric Power Commission, for the purpose of investigating the floods on the Grand River or any other river in the Province, or the means of preventing or mitigating such floods or of conserving and regulating the flow of such rivers or investigating the electrical power potentialities of such rivers. Presented to the Legislature, February 27th, 1914. Mr. *Marshall.* *Not Printed.*

No. 59 Return to an Order of the House of the 22nd April, 1913, for a Return showing:—Copies of all correspondence between the Attorney-General or any other member of the Government or any official of the Government and any other person or persons relating to:—1. The prosecution of one Goodman, formerly Chief of Police at New Liskeard on November 12th last, for an offence against the Game Laws. 2. The conduct of one McKelvie, an overseer of the Game and Fisheries Department at

New Liskeard, Ont., or the dismissal of the said McKelvie from his position. 3. The prosecution of one Eli Tibbs in November, 1912, for illegal possession of furs. 4. The prosecution of any party or parties for illegal possession of furs seized by the said McKelvie from one Angus Wabi. Presented to the Legislature, February 27th, 1914. Mr. *Elliott.* *Not Printed.*

No. 60 A Return to an Order of the House of the 15th April, 1913, for a Return showing:—1. In detail the persons to whom the sum of $19,946.18, appearing an page 323 of the Public Accounts, 1912, was advanced by N. B. Colcock, and the purposes for which the same was advanced. 2. In detail the persons to whom the sum of $11,060.85, appearing on page 372 of the Public Accounts was paid by N. B. Colcock, and the purposes for which the same was paid. Presented to the Legislature, March 3rd, 1914. Mr. *Anderson (Bruce).* *Not Printed.*

No. 61 Copies of Orders-in-Council authorizing payments out of Surrogate of the Counties of York and Simcoe in accordance with the provisions of the Surrogate Courts Act. Presented to the Legislature, March 10th, 1914. *Not Printed.*

No. 62 Return to an Order of the House of the 11th March, 1913, for a Return showing for what Municipalities was the Report of the Lieutenant-Governor in Council in favour of, or against, building an electric railway for such Municipalities. Presented to the Legislature, March 16th, 1914. Mr. *Elliott.* *Printed.*

No. 63 Copies of Orders in Council in accordance with the provisions of sec. 2, cap. 2, 2 George V, An Act for raising money on the Credit of the Consolidated Revenue Fund of Ontario. Presented to the Legislature, March 16th, 1914. *Not Printed.*

No. 64 Return to an Order of the House of the 2nd March, 1914, for a Return showing:—1. What securities have been sold by the Province since October 31st, 1912. 2. What was the date of the sales. 3. What are the names of the purchasers. 4. What are the prices at which such securities were sold. Presented to the Legislature, March 16th, 1914. Mr. *Sinclair.* *Not Printed.*

No. 65 Return to an Order of the House of the 27th February, 1914, for a Return showing:—1. What timber limits, or areas, have been sold by the Government since the first day of January, 1913, and the total area of each. 2. The price at which each such limit, or area, was sold. 3. The names of the respective purchasers and if any were sold at public auction. 4. And if any were so sold at auction, which limit or area was so sold, and the dates on which the several sales took place. Presented to the Legislature, March 18th, 1914. Mr. *Mageau.* *Not Printed.*

No. 66 Return to an Order of the House of the 6th March, 1914, for a Return showing:—1. Application for license of William Smuck of the Township of Bayham in the electoral district of East Elgin for the year 1913-14; the granting thereof; the withdrawal of such application; all correspondence between the Department and any officer thereof and the said Smuck, or the License Inspector or other residents of East Elgin in reference thereto. 2. The application of the said Smuck to be appointed License Inspector for East Elgin, and all protests against his appointment. 3. All letters, reports or communications in reference to the health or work by the former License Inspector, Mr. W. R. Andrews. 4. The resignation of the former License Inspector or Notice of the Termination of his employment. 5. All protests or complaints during the years 1912, 1913 and 1914 from residents of Aylmer or other citizens of East Elgin in reference to the lack of enforcement of the License Law and the conduct of the hotels in Aylmer or of license officials of East Elgin. Presented to the Legislature, March 27th, 1914. Mr. *Rowell. Not Printed.*

No. 67 Minutes of the Proceedings in Conference of the Representatives of the Provinces, October, 1913. Presented to the Legislature, March 19th, 1914. *Printed.*

No. 68 Return to an Order of the House of the 2nd March, 1914, for a Return showing:—1. What amount was received by the Government from Messrs. Taylor, Scott & Co. for the work done by prisoners from Central Prison under its contract with Taylor, Scott & Co., dated 1st September, 1905, for each year during which the contract was in force. 2. How long was the contract in force. 3. What amounts were paid by the Government for debt, damages or costs respectively in connection with or arising out of the said contract. 4. To whom were such amounts paid. 5. Was the agreement between Taylor, Scott & Co. and the Government changed after the agreement had been submitted to the House and approved by it. 6. If it were changed, were such changes embodied in an agreement in writing between the parties. 7. If it was changed, was such change or modified agreement submitted to the House for approval. Presented to the Legislature, March 23rd, 1914. Mr. *Bowman. Not Printed.*

No. 69 Return to an Order of the House of the 18th March, 1914, for a Return showing:—1. The names of the license holders under the Liquor License Act in the City of Toronto for the year from 1st May, 1908, to 1st May, 1909, and the place or places of business in which each license holder carried on business. 2. The names of those license holders under the said Act, and the location of the premises in which they carried on business, whose licenses were cut off or were not renewed in the year

1909 in Toronto. 3. The names of the license holders in Toronto whose licenses were transferred with the approval of the Board of License Commissioners in the years 1909, 1910, 1911, 1912 and 1913; the places in which they carried on business; the names of the persons to whom licenses were transferred; and the locations of the premises in which the persons to whom the licenses were transferred carried on business. Presented to the Legislature, March 23rd, 1914. Mr. *Proudfoot. Not Printed.*

No. 70 Return to an Order of the House of the 26th March, 1913, for a Return showing:—1. All the correspondence (including telegrams) passing between the Prime Minister, the Attorney-General, the Minister of Crown Lands or any other member or official of the Government and the Counsel or Solicitors for Keewatin Power Company, or the Counsel or Solicitors for the Hudson's Bay Company with reference to the action brought by these Companies against the Town of Kenora for a declaration that they and not the Crown were the owners of the water power on the East Branch of the Winnipeg River, and that the lease from the Crown to the Town of Kenora was invalid. 2. A copy of the telegram (if any) sent by the Prime Minister to the Counsel for the Keewatin Power Company advising him that the Government did not desire to defend its own title to the water power or be added as a party to the action. 3. All correspondence (including telegrams passing between the Town of Kenora or the Counsel or Solicitors for the Town of Kenora, and the Government or any Minister or official thereof with reference to these actions, and particularly all communications requesting the Crown to take part in the defence of its own title to the water power. 4. Copies of all correspondence (including telegrams) passing between the Prime Minister, Attorney-General, the Minister of Crown Lands or any other Minister or official of the Government, and Mr. W. H. Hearst, acting as Counsel for the Government, in reference to these actions. 5. Copy of the judgments of the Trial Judge and the Court of Appeal. Presented to the Legislature, March 24th, 1914. Mr. *Rowell. Not Printed.*

No. 71 Revised Rules, Orders and Forms of the Division Courts of the Province of Ontario. Presented to the Legislature March 26th, 1914. *Printed.*

No. 72 Correspondence and Papers relating to timber in the Algonquin Park Forest Reserve. Presented to the Legislature, March 27th, 1914. *Printed.*

No. 73 Whitson's Report upon Road Construction in Northern Ontario. Presented to the Legislature, March 30th, 1914. *Printed.*

No. 74 Return to an Order of the House of the 27th February, 1914, for a Return showing:—1. The names of the tenderers for the supply of coal for Government Institutions, in Toronto, during the years 1910, 1911, 1912 and 1913, respectively. 2. The amount of each tender for each of such years. 3. The names of the contractor or contractors for each of such years. 4. The amount of coal supplied under each contract during each year. 5. The prices at which the coal was purchased. Presented to the Legislature, March 31st, 1914. Mr. *Bowman*. *Not Printed.*

No. 75 Return to an Order of the House of the 27th February for a Return showing:—1. What buildings have been erected by the Province at the Prison Farm at Guelph. 2. What has been the total cost to the Province of each building. 3. Were any of these buildings built by prison labour in whole or in part. 4. If so, what buildings, and what class of prison labour was employed. 5. And if the statement of cost makes any allowance for the prison labour employed, if any. Presented to the Legislature, March 31st, 1914. Mr. *Atkinson*. *Not Printed.*

No. 76 Return to an Order of the House of the 18th March, 1914, for a Return showing:—1. Whether the Minister of Agriculture or any officer or official of his Department, or the Minister of Education or any officer or official of his Department, communicated with the district representative of Agriculture within the County of Welland with reference to his attitude to the Canada Temperance Act or the vote to be taken thereon on the 29th January last. 2. And if any communication was made, was such communication verbal or in writing. 3. And who was the officer making the same, and what was the date thereof. Presented to the Legislature, March 31st, 1914. *Not Printed.*

No. 77 Return to an Order of the House of the 27th March, 1914, for a Return showing:—1. The conditions upon which grants are made to rural public schools. 2. Were the grants to the rural public schools of Ontario in 1913 less per school in 1913 than they were in the year 1912. If so, how much. 3. Has the Department of Education notified the Boards of Public School Trustees of Rural Schools, or any of them, that they cannot pay the grant provided for by the regulations. 4. If such notice has been given, upon what their ground for refusing to pay the grants. 5. Has the Department of Education notified the School Boards of Rural Schools, or any of them, that the grants this year would be cut down 28 *per cent.*, or any amount whatever. If so, how much. Presented to the Legislature, April 1st, 1914. Mr. *Kohler*. *Not Printed.*

No. 78 Return to an Order of the House of the 30th March, 1914, for a Return showing:—1. What was the estimated cost of the heating plant for the Toronto University. 2. What was the actual cost of the plant when fully completed. 3. Has the total amount

been paid; if not, what amount, if any, is held in reserve. 4. And if the heating plant is giving satisfaction. Presented to the Legislature, April 1st, 1914. Mr. *Bowman*. *Not Printed.*

No. 79 Return to an Order of the House of the 1st April, 1914, for a Return of copies of all correspondence, resolutions or other documents received by, or on behalf of any Member of the Government in any way relating to the Hamilton Athletic Association regarding which certain legislation is sought for during the current Session. Presented to the Legislature, April 2nd, 1914. Mr. *Studholme*. *Not Printed.*

No. 80 Return to an Order of the House of the 1st April, 1914, for a Return showing:—1. What sum of money has Sir William Meredith, the Chief Justice of Ontario, received from the Government in addition to his salary as Chief Justice, since January 1st, 1909, to date. 2. In what capacity did Chief Justice Sir William Meredith receive such sum or sums, and what amount was received with respect to each capacity in which he received any sum or sums as aforesaid. Presented to the Legislature, April 2nd, 1914. Mr. *Anderson* (*Bruce*). *Not Printed.*

No. 81 Return to an Order of the House of the 27th March, 1914, for a Return showing:—1. If there was a deficit in the financial operations of the Provincial University for the fiscal year ending 1912. If so, how much. 2. Was there a deficit in the financial operations of the Provincial University for the fiscal year 1913. If so, how much. 3. If there have been deficits during the years 1912-13, or either of them, how have these deficits been provided for. 4. What is the estimated expenditure of the Provincial University for the current fiscal year. 5. What is the estimated revenue of the University for the current fiscal year. Presented to the Legislature, April 2nd, 1914. Mr. *Marshall*. *Not Printed.*

No. 82 Return to an Order of the House of the 27th March, 1914, for a Return showing:—1. If there was an option given to the firm of Murray, Mather & Co. to purchase certain Government securities during the calendar year 1913. 2. If so, what was the date of the option, and what were the character, amount and price of the securities covered by it. 3. Was such option, if any, exercised; and if so, to what extent. Presented to the Legislature, April 3rd, 1914. Mr. *Sinclair*. *Not Printed.*

No. 83 Return to an Order of the House of the 27th March, 1914, for a Return showing:—1. Copy of evidence of Mr. Taylor, of Messrs. Taylor, Scott & Co., given before the Dominion Penitentiary Investigation Commission, of which Mr. G. M. Macdonald, K.C., of Kingston, is Chairman, and which was taken in Shorthand by a Stenographer provided by Dr. Gilmour,

Warden of the Central Prison, such evidence or a copy thereof being now in the custody or control of the Provincial Secretary, or of some of the officers or officials of his Department, or of the institutions under the control of his Department. 2. Copies of all correspondence passing between the Provincial Secretary, or any officer or official of his Department, or any officer or official of any of the institutions under the charge of his Department, and Mr. Joseph Downey, in reference to the said evidence or the production thereof. Presented to the Legislature, April 3rd, 1914. Mr. *Bowman*. *Not Printed.*

No. 84 Report of the Good Roads Commission. Presented to the Legislature, April 7th, 1914. *Printed.*

No. 85 Copy of an Order-in-Council approved by His Honour the Lieutenant-Governor, under the provisions of 552 of sec. 18 of the Municipal Drainage Act. Presented to the Legislature, April 8th, 1914. *Printed.*

No. 86 Return to an Order of the House of the 2nd March, 1913, for a Return showing:—1. Copies of all correspondence between the Minister of Education or any other member or official of the Government and any other person or persons during 1910, 1911 and 1912, relating to the investigation made by Dr. Merchant of the bi-lingual or French-English Schools in Ontario. 2. Copies of all correspondence between the Minister of Education or any other member or official of the Government and any other person or persons during the year 1912, relating to Regulation No. 17. Presented to the Legislature, April 9th, 1914. Mr. *Mageau*. *Not Printed.*

No. 87 Return to an Order of the House of the 7th April, 1914, for a Return showing:—1. How much the Hydro-Electric Power Commission has spent in building the trunk line from Morrisburg to Prescott, and from Morrisburg to Winchester and Chesterville. 2. Did the Hydro-Electric Power Commission enter into an agreement with the New York and Ontario Power Company, or any person on their behalf, for a supply of power for transmission on this line, to be developed at Waddington or elsewhere; and if so, what is the date of such agreement. 3. Was it a term of any such agreement that the Directors of the New York and Ontario Power Company became personally liable if power was not supplied within a certain defined time. 4. Has the Hydro-Electric Power Commission entered into any agreement with the Rapids Power Company for the supply of power; if so, what is the date of such agreement. Presented to the Legislature, April 9th, 1914. *Not Printed.*

No. 88 Coles' Report, Mining Engineer, Timiskaming and Northern Ontario Railway Company. Presented to the Legislature, April 28th, 1914. *Printed.*

No. 89 Return to an Order of the House of the 8th April, 1914, for a Return showing:—1. The number of convictions for intoxication in Local Option Municipalities. 2. Convictions for other offences against Local Option Law during the license year 1912-13. Presented to the Legislature, April 14th, 1914. Mr. *McPherson*. *Not Printed.*

No. 90 Official Regulations for the Government of the Andrew Mercer Reformatory. Presented to the Legislature, April 16th, 1914. *Printed.*

No. 91 Official Regulations for the Government of the Hospitals and Public Charities of Ontario. Presented to the Legislature, April 16th, 1914. *Printed.*

No. 92 Official Regulations for the Government of Common Gaols of Ontario. Presented to the Legislature, April 16th, 1914. *Printed.*

No. 93 Official Regulations for the Government of Industrial Farms in Ontario. Presented to the Legislature, April 16th, 1914. *Printed.*

No. 94 Official Regulations for the Government of the Ontario Reformatory. Presented to the Legislature, April 16th, 1914. *Printed.*

No. 95 Official Regulations of the Ontario Hospitals. Presented to the Legislature, April 17th, 1914. *Printed.*

No. 96 Statement of Statute distribution for 1913. Presented to the Legislature, April 21st, 1914. *Not Printed.*

No. 97 Return to an Order of the House of the 27th March, 1913, for a Return showing:—Copies of all Orders in Council passed under Section 8, of the Power Commission Act, as amended by the Power Commissions Act, 1912. Presented to the Legislature, April 21st, 1914. Mr. *Mageau*. *Not Printed.*

No. 98 Return to an Order of the House of the 1st April, 1914, for a Return showing:—1. All the schools in the Province, both public and separate, from which the Government grant has been withheld during the years 1912 and 1913 respectively. 2. The grounds upon which such grants have been withheld from the said schools respectively. 3. The grounds upon which County Councils are required to withhold from schools the moneys raised by taxation from the people. Presented to the Legislature, April 21st, 1914. Mr. *Racine*. *Not Printed.*

No. 99 Return to an Order of the House of the Twenty-first day of April instant for a Return of a Copy of the Letters, or Charter, of the "Ontario Homes Company, Limited," giving the Corporation license to promote a company for the purpose of engaging in the business of the purchase of real estate in manufacturing localities and showing what, if any, returns have been made to the Department and if the company is still doing business. Presented to the Legislature, April 22nd, 1914. Mr. *Studholme. Not Printed.*

No. 100 Return to an Order of the House of the 16th April, 1914, for a Return showing:—The quantity of settlers' effects delivered over the T. & N. O. Railway at New Liskeard and Cochrane, respectively, and carried as such under the regulations of the said Railway, for the financial year ending October 31st, 1913. Presented to the Legislature, April 24th, 1914. Mr. *Atkinson. Not Printed.*

No. 101 Return to an Order of the House of the 17th February, 1913, for a Return of: Copies of all correspondence between Bishop Fallon, of London, and the Provincial Secretary, the Minister of Public Works or any Member of the Government regarding the Bi-lingual Schools in the Province of Ontario, since the first day of May, 1910. Presented to the Legislature, April 24th, 1914. Mr. *Evanturel. Not Printed.*

No. 102 Return to an Order of the House of the 17th February, 1913, for a Return of Copies of all correspondence between Bishop Scollard, of Sault Ste. Marie, and the Government, regarding the Bi-lingual Schools of the Province of Ontario, since the first day of March, 1907. Presented to the Legislature, April 24th, 1914. Mr. *Evanturel. Not Printed.*

No. 103 Return to an Order of the House of the 16th April, 1914, for a Return showing:—1. All correspondence between the Department of Education and any officer or official thereof and the Board of Trustees of the Almonte High School. 2. All correspondence between the Department of Education and any officer or official thereof and any of the teachers in the Almonte High School. 3. All correspondence between the Department of Education and any officer or official thereof and Miss Eade with reference to an application by her for a position in the Almonte High School. Presented to the Legislature, April 28th, 1914. Mr. *Marshall. Not Printed.*

No. 104 Return to an Order of the House of the 21st April, 1914, for a Return showing:—1. The present practice of the Department of Education in regard to the number of text-books authorized for use in each subject in the Course of Studies. 2. The number of text-books authorized for use in the elementary and secondary

schools of Ontario issued since the date of the last return laid before this House, March 20th, 1911, and the methods adopted to keep these books up to the requirements of the schools. 3. The cost to the Province of each of these books in the form of payments to authors, printers and electrotypers. 4. The estimated saving to purchasers of all text-books in elementary and secondary schools on all the books as compared with previous prices of the same. 5. The amount annually paid in royalties by the Department of Education to writers of authorized text-books. 6. The cost to the Province of the preparation, editing, and printing of supplementary readers authorized for use in the schools. 7. The amount paid annually by publishers to any official of the Department of Education on text-books authorized for use in the schools of this Province. 8. What Ontario books have been adopted in other Provinces. Presented to the Legislature, April 28th, 1914. Mr. *Musgrove*. *Printed.*

FINAL REPORT

ON

Laws Relating to the Liability of Employers

To Make Compensation to their Employees for Injuries received in the course of their employment which are in force in other countries.

By

THE HON. SIR WILLIAM RALPH MEREDITH, C.J.O.,
COMMISSIONER.

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Final Report

ON

LAWS RELATING TO THE LIABILITY OF EMPLOYERS TO MAKE COMPENSATION TO THEIR EMPLOYEES FOR INJURIES RECEIVED IN THE COURSE OF THEIR EMPLOYMENT WHICH ARE IN FORCE IN OTHER COUNTRIES, AND AS TO HOW FAR SUCH LAWS ARE FOUND TO WORK SATISFACTORILY.

By

THE HON. SIR WILLIAM RALPH MEREDITH, C.J.O., Commissioner

To His Honour Sir John Morison Gibson, K.C.M.G., K.C., LL.D., *Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

I have the honour to report that I have concluded the enquiries which I was by Your Honour's Commission bearing date the 30th day of June, 1910, appointed to make "as to the laws relating to the liability of employers to make compensation to their employees for injuries received in the course of their employment which are in force in other countries, and as to how far such laws are found to work satisfactorily," and on the first day of April, 1913, I submitted to Your Honour a draft bill embodying such changes in the law as in my opinion should be adopted in this Province, and I now proceed to state my reasons for recommending that the draft bill should be passed into law.

At the outset of the enquiry it was contended by those who spoke on behalf of the workingmen: (1) That the law of Ontario is entirely inadequate in the conditions under which industries are now carried on to provide just compensation for those employed in them who meet with injuries, or suffer from industrial diseases contracted in the course of their employment; and (2) that under a just law the risks arising from these causes should be regarded as risks of the industries and that compensation for them should be paid by the industries.

With these two propositions those representing the employers expressed their agreement, though it is fair to say that it was probably not intended to agree that compensation should be paid in respect of industrial diseases.

Agreeing as I did with the contention of the workingmen there remained only to be considered in what form and by what means the compensation should be provided.

For the purpose of reaching a conclusion as to this, and in obedience to the directions of the Commission, I made enquiry as to the laws in force in the principal European countries, in the United States of America and in the Provinces of Canada. I also visited Belgium, England, France, and Germany, and consulted those concerned in administering the laws of those four countries, and others

qualified to judge as to whether they have been found to work satisfactorily. Much evidence has been taken bearing upon the general question, all of which appears in the appendix to my first interim report, dated the 27th day of March, 1912, and the appendix to this report.

Before referring to the different systems in operation it may be proper to say that most of these laws, and perhaps all of them except the German, have not been in force long enough to enable a conclusive opinion to be formed as to their merits or demerits.

There are two main types of compensation laws. By one of them the employer is individually liable for the payment of it, and that is the British system. By the other, which may be called the German system, the liability is not individual but collective, the industries being divided into groups, and the employers in the industries in each group being collectively liable for the payment of the compensation to the workmen employed in those industries—practically a system of compulsory mutual insurance under the management of the State. The laws of other countries are of one or other of these types, or modified forms of them, and in most, if not all of them, in which the principle of individual liability obtains, employers are required to insure against it.

Those representing the workingmen at the beginning of the enquiry appeared to favour the adoption of the British system. Mr. F. W. Wegenast, who represented the Canadian Manufacturers Association, strongly urged the adoption of the German system, and his view was supported by most of the other employers who appeared or were represented before me, and later on in the enquiry the representatives of the workingmen fell in with Mr. Wegenast's views.

There were, however, differences of opinion as to details. The employers insisted that a part of the assessments to provide for the payment of the compensation should be paid by the employees, and this was vigorously opposed by the representatives of the workingmen. The employers desired that no compensation should be payable where the injury to the workman did not disable him from earning full wages for at least seven days, and to this the representatives of the workingmen objected. The employers also desired that, as the British act provides, an employee should not be entitled to compensation if his injury was due to his own serious and wilful misconduct, but the representatives of the workingmen objected to any such limitation of the right to compensation.

As stated in my first interim report, I had then come to no conclusion as to these matters, or as to what system of compensation I should recommend for adoption, nor had I reached a conclusion as to the industries to which the law should be made applicable, nor as to certain other details which I enumerated in my report.

After the best consideration I was able to give to the important matters as to which I was commissioned by Your Honour to make recommendations, I came to the conclusion, to which I still adhere, that a compensation law framed on the main lines of the German law with the modifications I have embodied in my draft bill is better suited to the circumstances and conditions of this Province than the British compensation law, or the compensation law of any other country.

I have had the benefit of hearing the opinions of Mr. Miles M. Dawson, Mr. S. H. Wolfe, Mr. P. Tecumseh Sherman, and Mr. F. W. Wegenast, all of whom have given special attention to the subject of compensation laws and industrial accident insurance, as to the operation of those laws, and as to the best form of compensation law to be adopted under the conditions which obtain in this Province.

and also of hearing the opinions of Mr. James Harrington Boyd, who had a large part in framing the compensation law passed by the Legislature of the State of Ohio, and of Mr. F. W. Hinsdale, the chief auditor of the Industrial Insurance Board of the State of Washington, as to the operation of the compensation laws of those States, and also upon the general question as to the best form of compensation law for this Province.

These gentlemen differed widely in their opinions as to the best form of compensation law, as will be seen from their testimony and arguments which appear in the appendices to my report, and from the memoranda submitted by Mr. Wolfe and Mr. Sherman, although they are practically unanimous as to the industries bearing the burden of the compensation, and, with the exception of Mr. Wegenast, they are all of opinion that this burden should be borne equally by the employer and employed.

Mr. Sherman is opposed to the system of collective liability, which he characterizes as unjust because it imposes upon the individual employer the obligation of sharing the burden of accidents in other establishments than his own and, as he assumes, notwithstanding that by the introduction of the best machinery and appliances and safeguarding against accident he has reduced the number of accidents in his establishment to a minimum, he is placed as respects his liability to pay compensation on the same footing as an employer whose machinery and appliances are defective and who takes little or no precaution to guard against accidents in his establishment.

If a uniform rate were payable by all the employers in a class or sub-class, regardless of these considerations, I agree that there would be the injustice which Mr. Sherman points out, but I have in the draft bill which I have submitted introduced provisions (sec. 71, s.s. 2 and 4) which, in my opinion, will provide against that happening.

The arguments presented by Mr. Dawson and Mr. Wegenast, and perhaps those of Mr. Wolfe, in favour of the collective system are, I think, unanswerable if, as I believe, the true aim of a compensation law is to provide for the injured workman and his dependants and to prevent their becoming a charge upon their relatives or friends, or upon the community at large.

It is in my opinion essential that as far as is practicable there should be certainty that the injured workman and his dependants shall receive the compensation to which they are entitled, and it is also important that the small employer should not be ruined by having to pay compensation, it might be, for the death or permanent disability of his workmen caused by no fault of his. It is, I think, a serious objection to the British act that there is no security afforded to the workman and his dependants that the deferred payments of the compensation will be met, and that objection would be still more serious in a comparatively new country such as this, where many of the industries are small and conditions are much less stable than they are in the British Isles.

This objection could, of course, be met by making it obligatory upon the employer to insure his workmen against accident to the maximum amount to which they or their dependants would be entitled under the act, but if insurance is to be compulsory I see no reason why the cheapest form of it—mutual insurance—should not be prescribed.

I agree also with Mr. Dawson that the ultimate burden of paying the compensation under such a law as is proposed falls upon the community and that

whatever the employer has to pay, whether directly by way of compensation, or if he insures against his liability by paying insurance premiums, forms part of the cost of that which he produces and is added to the selling price.

Mr. Sherman's view is that insurance should be made compulsory "only if and when reasonably necessary in order to assure to the injured workmen the payment of their compensation," and that "in no event should those concerns that are amply able to carry their own insurance be required to buy insurance or contribute to a State scheme, for that," he says, "would be pure economic waste."

I do not understand the latter argument or how there can be said to be economic waste if the "concerns" he mentions are not required to do more than contribute with other employers to the payment of compensation according to the hazard of their respective businesses. I could understand that there might be economic waste if it were incumbent on such an employer to insure with a joint stock company which would require him to pay a premium sufficient to provide for the cost of securing the business and a reasonable dividend to its shareholders as well as to indemnify against the risk undertaken.

There was much discussion as to the basis on which the assessments to provide the compensation should be made. The German law provides for assessing only for the amounts required to meet the payments of compensation which fall due during the year next preceding that in which the assessments are made, with an added percentage to provide a reserve fund to meet deficiencies in the accident fund in the event of an unusual catastrophe or a depression in trade, but no assessment is made beyond that to meet the deferred payments of compensation, i.e., the payments which are to become due in future years. This plan, popularly called the current cost plan, is that proposed by the Canadian Manufacturers Association, and Mr. Dawson favours it as not only expedient because it does not involve making the heavy assessments which would have to be made at the outset if the capitalized value of the deferred payments had to be provided for by the assessments, but also as "not unfair to the employers in future years, or economically unsound."

On the other hand the current cost plan is vigorously denounced by Mr. Sherman, who contends that it is manifestly unfair to the employer of the future because it shifts upon his shoulders part of the burden of compensating for accidents which have happened before he became an employer, and that it results in low assessments in the early years of the operation of the law, and necessarily increases in the later years, until in a measurable period of time they become a burden too oppressive for the employer of the future to bear.

In support of his view Mr. Sherman referred to the rates in Germany, which he said, "now average about double what they were at the beginning," and he added that "it is calculated that they will not reach their stable maximum for some twenty years more. How much more they will then be no one knows, but the majority guess is they will then double."

Mr. Wolfe is equally emphatic in his condemnation of the current cost plan, and in addition to his oral testimony presented a table which appears on page 147 of the appendix to this report, and which he contended demonstrates the accuracy of his conclusions.

The views of Mr. Sherman and Mr. Wolfe were controverted by Mr. Wegenast, who contended that statistics prove that in some instances the stable maximum has already been reached and that there is nothing to justify the gloomy forebodings of Mr. Sherman as to the future.

Mr. Wegenast's contention is hardly supported by Mr. Dawson, whose opinion (page 452, appendix to first interim report) is that there will be an increasing rate "which is estimated to increase pretty rapidly for about ten years and then rather slowly and with increasing slowness for at least fifteen years longer, and if there is no improvement in the conditions relating to trade and industry, it will still very slowly increase for twenty-five years beyond that."

I am not convinced that the German plan affords an adequate safeguard against the dangers which Mr. Sherman anticipates, nor am I satisfied that it does not do so. I have, therefore, concluded that the act should not lay down any hard and fast rule as to the amount which shall be raised to provide a reserve fund and that it is better to leave that to be determined by the Board which is to have the collection and administration of the accident fund as experience and further investigations may dictate. I have therefore made provision in the draft bill to that end, by making it "the duty of the Board at all times to maintain the accident fund so that with the reserves it shall be sufficient to meet all the payments to be made out of the fund in respect of compensation as they become payable and so as not unduly or unfairly to burden the employers in any class in future years with payments which are to be made in those years in respect of accidents which have previously happened," (sec. 70). and by authorizing the Lieutenant-Governor in Council if in his opinion the Board has not performed that duty to require the Board to make a supplementary assessment of such sum as in his opinion is necessary to be added to the fund, (sec. 90), and these provisions I deem essential to the safety and adequacy of the scheme of compensation for which the draft bill provides.

I may here point out that the act of the State of Washington upon which the draft bill submitted by the Canadian Manufacturers Association, to which I shall afterwards refer, is modeled, requires that for every case of injury resulting in death or permanent total disability there shall be set apart out of the accident fund the estimated present value of the monthly payments to which the workman or his dependants are entitled, the total in no case to exceed $4,000.

Mr. Sherman also takes strong grounds against the administration of the act being committed to a Board appointed by the State, his view being that such a Board will be influenced by partisan political considerations in practically all its doings. I have no such fear. Whatever else may be doubtful as to the workings of the act there is no doubt, I think, that the members of the Board appointed by the Crown will impartially and according to the best of their ability discharge the important duties which will devolve upon them in the event of the draft bill becoming law. Whatever may be the experience of other countries the experience of Canada does not justify the view which Mr. Sherman entertains. There are now two Provincial Commissions appointed by the Crown discharging very important duties—the Ontario Railway and Municipal Board and the Hydro-Electric Power Commission—and one appointed by the Governor-General also discharging very important duties—the Railway Commission of Canada. Whatever criticisms there may have been of the action of these Boards, no one, as far as I have heard, has ever charged or even suggested that any member of them has been actuated or influenced by partisan political considerations in any action that has been taken by him and I know of no reason why the Board which is provided for by the draft bill may not be expected to be as free from political partisanship as either of the Boards I have mentioned.

I proceed now to state the general plan upon which the bill has been drafted. The bill is divided into Parts. In Part I the liability of employers to contribute to the accident fund or to pay the compensation individually is dealt with.

The bill does not provide for making all employers liable to pay compensation, but only those in the industries enumerated in schedules 1 and 2, and provision is made for industries enumerated in schedule 2 being added to schedule 1 whenever the Board deems it expedient to add them. Schedule 1 includes all the industries which it is proposed by the draft bill of the Canadian Manufacturers Association to bring within the scope of the act, except those enumerated in schedule 2.

The inclusion of railways in schedule 1 was opposed by the three principal steam railway companies and by some of the other railway companies, and I saw no reason why their wishes should not be met if by meeting them the act would not be rendered less beneficial to the employees and no injustice would be done to the employers in the industries included in the schedule. The draft bill has been framed so as, in my opinion, to work no injustice to anyone and not less beneficially to the employees owing to railways being excluded from the schedule.

The only difference between the operation of the act as to industries in schedule 1 and those in schedule 2 is that employers in the former contribute to the accident fund and in that way pay collectively the compensation, while employers in the latter do not contribute to the accident fund but are liable individually for the compensation payable to their employees. In other respects the operation of the act is the same in both cases. The Board determines the amount of the compensation in both cases and its orders when filed in a County or District Court become orders of the court and may be enforced as judgments of it.

The reasons for adopting the collective system have practically no application to railways, especially when, as has already been done in Ontario and will, I do not doubt, be done when the Parliament of Canada meets, provision is made that all sums payable for compensation shall form part of the working expenditure of the railway company, which is a first charge upon its revenues.

It is manifest, I think, that schedule 1 should not include industries of Municipal Corporations or Commissions, Public Utilities Commissions, Trustees of Police Villages and School Boards, and they have therefore been included in schedule 2.

Schedule 2 also includes the industries of telephone companies and navigation companies. These industries, like those of railway companies, are exceptional in their character, and the reasons for adopting the collective system have no application to them.

In order that additional security may be afforded that the compensation to which employees in the industries in schedule 2 and their dependants may become entitled will be paid, provisions are embodied in the draft bill enabling the Board to require an employer in any industry included in the schedule to commute the weekly or other periodical payments of compensation, (secs. 27 and 28), and also to insure his workmen and keep them insured against accidents in a company approved of by the Board for such sum as the Board may direct.

If it had been practicable to do so without impairing the efficiency of the collective system I should have preferred to include a larger number of industries in schedule 2 in order that with the two systems working side by side experience might demonstrate whether the collective system or that of individual liability was preferable, but I have not been able to satisfy myself that the exclusion from schedule 1 of any considerable number of the industries included in it would not impair the efficiency of the collective system, and I have therefore excluded from

it only the industries enumerated in schedule 2. Although but a small number of industries are included in that schedule the operation of the two systems will afford some evidence as to which is the better.

Another reason why it is not expedient to bring these omitted industries within the scope of the act is that by doing so the initial work of the Board would be very greatly augmented and the risk would be run that it would be so overburdened as practically to paralyze its operations. It is, in my opinion, much better that if these industries are to be brought in that should be done later on.

As what I have said has indicated, I have not thought it advisable at the outset to bring within the scope of Part I all employments. The principal industries excluded are the farming, wholesale and retail establishments, and domestic service. There is, I admit, no logical reason why, if any, all should not be included, but I greatly doubt whether the state of public opinion is such as to justify such a comprehensive scheme, and it is probable that when the question of bringing these industries within the scope of the act has to be considered, it will be found that provisions somewhat different from those which are applicable to the industries which it is proposed now to bring within it will be necessary.

I have however made provision for bringing any of these excluded industries within the scope of Part I if and when the Board deems it proper to do so, and its regulation or order bringing them in is approved by the Lieutenant-Governor in Council.

The bill would, in my opinion, fail to do justice to a large body of employees who will not be entitled to compensation under Part I, if it did not provide for a substantial modification of the common law as to the liability of the employer to answer in damages to an employee who is injured owing to the negligence of the employer or his servants.

According to the common law it is a term of the contract of service that the servant takes upon himself the risks incidental to his employment (popularly called the assumption of risk rule), and that this risk includes that of injury at the hands of fellow-servants, (popularly called the doctrine of common employment). The doctrine of common employment is an exception to the general rule that the master is responsible for the acts of his servants when engaged in his work, and has rightly, I think, often been declared unfair and inequitable. The reasoning upon which the exception was justified in the celebrated case of Priestley v Fowler does not commend itself to me as satisfactory, and I doubt whether if the question were to arise now for the first time the same conclusion would be reached. The case was decided at a time when very different views as to the respective rights and duties of employer and employed prevailed than are entertained at the present day, and at a time not far removed from that in which there was upon the Imperial statute book a law which made it a criminal offence punishable with imprisonment for "journeymen manufacturers or others" to agree together for obtaining an advance of the wages of themselves or of any one else, or for lessening or altering their usual hours or time of working.

The unfairness of this doctrine has been recognized by the Imperial Parliament and by the Legislature of this Province in the enactment of employers' liability acts which have modified it but to a very limited extent.

In referring to the legislation of this Province my reference is to the act called the Workmen's Compensation for Injuries Act, which is erroneously so styled, for it is really an employers' liability act.

In my opinion there is no reason why this objectionable doctrine should not, as one of the provisions of Part II of the draft bill provides, be entirely abrogated.

The draft bill also provides for the abrogation of the assumption of risk rule.

The rule is based upon the assumption that the wages which a workman receives include compensation for the risks incidental to his employment which he has to run. That is, in my judgment, a fallacy resting upon the erroneous assumption that the workman is free to work or not to work as he pleases and therefore to fix the wages for which he will work, and that in fixing them he will take into account the risk of being killed or injured which is incidental to the employment in which he engages.

Another rule of the common law is unfair to the workman. Although the employer has been guilty of negligence, if the workman has been guilty of what is called contributory negligence and his injury was occasioned by their joint negligence the employer is not liable. The injustice of this rule consists in this, that though the employer may have been guilty of the grossest negligence, if the workman has been guilty of contributory negligence, however slight it may have been, and his injury was occasioned by the joint negligence, the employer is not liable.

It is proposed by the draft bill to substitute for this rule that of comparative negligence as it is called, and provide that contributory negligence shall not be a bar to recovery by the workman or his dependants but shall be taken into account in the assessment of damages.

That in making these recommendations I am not advancing any novel proposition is shown by the fact that what I propose should be done in this Province has already been done in some of the States of the neighbouring Republic, and that the rules which it is proposed to abrogate or modify no longer meet the requirements of modern industrial conditions and are unjust as applied to the complex relations of master and servant as now existing, and to the use of complicated machinery and the great and dangerous forces of steam and electricity of to-day is the generally accepted view, and was the unanimous opinion of the Employers' Liability and Workmen's Compensation Commission of the United States (Report of Commission, Vol. I, pages 1,213 and 1,214).

Having outlined the provisions of the draft bill I have submitted to Your Honour and stated my reasons for recommending their adoption I proceed to a consideration of those provisions of the draft bill submitted on behalf of the Canadian Manufacturers Association and which, I assume, embodies its views as to the form which a proper compensation law should take, which differ from those of my draft bill, omitting such of the points of difference as I have already discussed.

The compulsory provisions of the draft bill of the Association apply only to industries in which three or more persons are regularly employed, but the option is given to employers in industries in which less than three persons are employed to come under the provisions of the act. The application of the act is not so limited in my draft bill, but provision is made (sec. 73) that the Board may withdraw or exclude from a class industries in which not more than a stated number of workmen are employed, and that an employer in any industry so withdrawn or excluded may nevertheless elect to become a member of the class to which but for the withdrawal or exclusion he would have belonged.

In my opinion it is most undesirable that there should be any such limitation of the application of the act as the Association proposes. As I have already pointed out, it is to industries in which a small number of workmen are employed that

the provisions of such an act are peculiarly applicable—as to the small employer, to prevent his being ruined as the result of an accident in his establishment, and as to his workman to insure that he will be compensated if he meets with an accident.

I am very doubtful whether it is desirable to adopt the provisions of section 73 of my draft bill. My object in introducing them was to make easier the work of the Board at the outset, and not with any idea that the power would be exercised except as a temporary expedient to lessen the work of the Board in the early stages of the administration of the act.

The proposition advanced on behalf of the Association in the early stages of my enquiry, that employees should be required to contribute to the accident fund, has apparently been abandoned, as I do not find in its draft bill any provision of that kind. I find in it, however, a provision (sec. 43) that the Board, if satisfied that in any employment the workmen are "desirous of an increase in the scale of compensation and are willing to pay the necessary increase in premiums, may by order sanction any such increased scale and may provide the method of collecting the increase in the premiums from the workmen in such employment."

In my opinion it is not desirable to complicate the act by the introduction of any such provision. It would not, I think, be taken advantage of by workmen, and it is difficult for me to understand exactly what it means. Is it intended that it shall be applicable to a single establishment or only to a class? Are the workmen to be unanimous, or can the power which the section confers be exercised if a majority of them desires an increase in the scale of compensation on the prescribed condition? If the workmen must be unanimous, the section, I have no doubt, will be a dead letter. If it is intended that a majority shall suffice, the provision is, in my judgment, highly objectionable. Sub-section 2 of the section seems to be inconsistent with sub-section 1 or incomplete, in not providing that if the employer pays the increased premium he may deduct it from the wages of the workmen.

The mode in which the assessments are to be collected proposed by the Association differs somewhat from that provided for by my draft bill. The mode which I provide for is, I think, the simpler.

I do not like the term "premium" which is used in the Association's draft bill to designate the rate at which the employer is to be assessed. I prefer the terminology which I have used. What is levied by the Board is not a premium but an assessment.

The draft bill of the Association has but one schedule of industries to all of which the act applies, and it makes no provision for abrogating or modifying the rules of the common law as to employers who are not within the scope of the act. How my draft bill differs from this will be apparent from what I have said in dealing with the general plan upon which it has been drafted.

By my draft bill (sec. 60) the Board is given exclusive jurisdiction as to all matters and questions arising under Part I, and subject to its power to rescind, alter or amend any of its decisions or orders, its action or decision is final and is not subject to appeal.

It is difficult to understand from the Association's draft bill what the jurisdiction of the Board is intended to be. Section 21 provides that the Board shall have jurisdiction to enquire into, hear and determine all matters and questions of fact and law *necessary to be determined in connection with compensation payments and the administration thereof and the collection and management of the funds thereof.*

This language would confer on the Board a rather limited jurisdiction and probably, judging from the provisions of section 22, less than the draftsman intended it should have. The decisions and findings of the Board upon questions of fact are made final and conclusive, but on questions of law an appeal is allowed.

In my opinion it is most undesirable that there should be the appeal for which the draft bill provides. A compensation law should, in my opinion, render it impossible for a wealthy employer to harass an employee by compelling him to litigate his claim in a court of law after he has established it to the satisfaction of a Board such as that which is to be constituted, and which will be probably quite as competent to reach a proper conclusion as to the matters involved, whether of fact or law, as a court of law.

I may point out that section 23, which allows an appeal from the decision of the Board on "questions of law," appears to be inconsistent with section 22, for in the determination of the questions enumerated in that section which are to be deemed questions of fact it may be necessary to decide questions of law, and I confess that I do not quite understand what kind of questions, if those enumerated in section 22 are eliminated, it is intended to make appealable.

In a note to section 22 it is stated that "it is submitted that it would not be wise to entirely shut out appeals and place in the hands of the Board the sole right to interpret the act . . . . and the right to define its own jurisdiction." What danger is to be apprehended from conferring these rights I do not understand, nor do I see what questions as to the construction of the act are likely to arise other than those enumerated in section 22.

In my judgment the furthest the Legislature should go in allowing the intervention of the courts should be to provide that the Lieutenant-Governor in Council may state a case for the opinion of a Divisional Court of the Appellate Division of the Supreme Court of Ontario, if any question of law of general importance arises and he deems it expedient it should be settled by a decision of a Divisional Court. Although I say this my judgment is against the introduction of any such provision, as it is probable that if any form of appeal to an appellate court is allowed, a defeated litigant will have the right to take his case to the Judicial Committee of His Majesty's Privy Council.

Section 10 of my draft bill, which deals with the case of sub-contractors and is applicable only to industries mentioned in schedule 2, is taken from the British Compensation Act. As the Association's draft bill does not provide for individual liability in any case, no provision corresponding to section 10 is found in it.

Sections 66, 67, and 68 of the Association's draft bill deal with the case of sub-contractors. They are, in my opinion, unnecessary and undesirable.

The draft bill of the Association is made to apply to the Crown. My draft bill is not. Apart from the question of the jurisdiction of a Provincial Legislature to affect the Crown as represented by the Dominion, it is in my opinion inexpedient that the act should apply to the Crown. It would be quite anomalous to group the Crown in respect of road-making, for instance, with other road-makers, and to make assessments upon the Crown as in the case of private persons.

I have no doubt that in case of injury to an employee of the Crown, for which if his employer were a private person he would be entitled to compensation, the Crown would make the like compensation to him and avail itself of the services of the Board for the determination of the amount and nature of the compensation.

The Association's draft bill (sec. 4) disentitles the workman and his dependants to compensation if his injury was, in the opinion of the Board, intentionally

caused by the workman, or was due wholly or principally to intoxication or serious and wilful misconduct on the part of the workman. My draft bill provides that compensation shall not be payable where the injury is attributable solely to the serious and wilful misconduct of the workman unless the injury results in death or serious disablement.

The provisions of section 4 of the Association's bill are, in my opinion, objectionable. There is no need for the provision as to intentional injury as an injury purposely caused to himself by a workman is not an accident, and compensation is payable only in cases of accident and industrial diseases. In addition to this the definition of "accident" in the interpretation section of my draft bill (sec. 2) makes this abundantly clear; nor is there any reason for introducing a reference to intoxication, the provision as to serious and wilful misconduct being sufficient to cover any case in which drunkenness ought to bar the right to compensation. Section 4 applies whatever may be the result of the injury. The corresponding provision of my draft bill, following the British Compensation Act, does not apply where the injury results in death or serious disablement.

By my draft bill, following in this respect the British act, industrial diseases are put on the same footing as to the right of compensation as accidents. The Association's bill applies only to accidents. The diseases to which the act is to be made applicable are six in number and are enumerated in schedule 3 to my draft bill, but power is given to the Board by its regulations to add to the schedule. It would, in my opinion, be a blot on the act if a workman who suffers from an industrial disease contracted in the course of his employment is not to be entitled to compensation. The risk of contracting disease is inherent in the occupation he follows and he is practically powerless to guard against it. A workman may to some extent guard against accidents, and it would seem not only illogical but unreasonable to compensate him in the one case and to deny him the right to compensation in the other.

The last point of difference between the two draft bills to which I shall make any detailed reference is that as to the scale of compensation.

The scale of compensation proposed by the Association is in my opinion based upon a wrong principle and will not afford reasonable compensation to the injured workman and his dependants; and indeed I doubt whether, if it were adopted, the workingmen would upon the whole be in a much better position than they would be in without the act, especially if the changes in the common law which I recommend are made.

A just compensation law based upon a division between the employer and the workman of the loss occasioned by industrial accidents ought to provide that the compensation should continue to be paid as long as the disability caused by the accident lasts, and the amount of compensation should have relation to the earning power of the injured workman.

To limit the period during which the compensation is to be paid regardless of the duration of the disability, as is done by the laws of some countries, is, in my opinion, not only inconsistent with the principle upon which a true compensation law is based, but unjust to the injured workman for the reason that if the disability continues beyond the prescribed period he will be left with his impaired earning power or, if he is totally disabled without any earning power at a time when his need of receiving compensation will presumably be greater than at the time he was injured, to become a burden upon his relatives or friends or upon the community.

A uniform rate of compensation which has no relation to the earning power of the workman, except as the Association's bill provides, for the purpose of reducing the rate of 50 per cent. of his wages is, in my opinion, also inconsistent with the principle upon which a just compensation law is based, and unfair, and a most undesirable mode of fixing the amount of compensation.

Not only is the scale of compensation proposed by the Association open to these objections, but the amount of the compensation is so small that only the lowest paid workman would be compensated to the extent of 50 per cent. of the loss of his earning power.

The case of an unmarried locomotive engineer earning $150 a month, not an unusual wage for the engineer of a passenger train, may be taken to illustrate the effect of the Association's proposition. All that he would be entitled to if permanent disability resulted from his injury would be $20 a month, or less than 14 per cent. of the loss of his earning power, except in the rare case of his being rendered completely helpless and requiring constant personal attendance, and in that case his compensation would be double that amount.

There are other provisions which in my judgment are still more objectionable. The limitation to $1,500 of the amount of compensation in case of permanent partial disability is, I think, unreasonable, as is manifest from the illustration just given.

The payment of lump sums is contrary to the principle upon which compensation acts are based and is calculated to defeat one of the main purposes of such laws—the prevention of the injured workman becoming a burden on his relatives or friends or on the community—and has been generally deprecated by judges in working out the provisions of the British act, and was condemned by the Association itself in the memorandum which it submitted, and which appears in the appendix to my first interim report (pp. 67-69).

The proposition that the maximum compensation in case of the loss of a major arm shall be $1,500 besides being open to the objection I have just mentioned would be most unfair in the case of a labourer, to say nothing of the skilled artisan.

A more unjust and, as it appears to me, extraordinary proposition is that contained in clause (c) of section 31, which provides that in the case of temporary disability no compensation shall be payable unless it results "in the diminution of daily earnings to the extent of at least fifty per cent"; and as far as I am aware, and as I should expect, there is no precedent for it in the legislation of any country. As far as I have been able to ascertain, the furthest that any country has gone in that direction is to provide, as do the Washington act (s. 5, clause d) and the law of Norway of July 23rd, 1894, amended by acts of December 23rd, 1899, and June 12th, 1906 (art. 4, par. 2b), that no compensation shall be payable unless the loss of earning exceeds five per cent. In my opinion there is no justification for any such exception even if it is limited as in the Washington and Norway laws.

The scale of compensation which I propose was strongly objected to by the Association as being unfair to the manufacturer, and as imposing upon him a burden that would handicap him in his competition with the manufacturers of the other Provinces and of other countries, and would tend to divert manufacturing from this Province to other Provinces in which less onerous laws are in force. It was also urged that the scale of compensation is higher than that of any other country. The last objection, if a valid one, means that there can be no progress

beyond the point which has now been reached by the country which has provided the highest scale of compensation, for if the objection is valid as to the proposed legislation it would be an equally valid objection to any increase in the compensation proposed for the country which now provides for the highest scale. "The question, in my opinion, is not what other countries have done, but what does justice demand should be done." I have no fear that if the bill should become law it will handicap the manufacturers of this Province as the Association appears to think that it will, or that it will divert manufacturing from the Province. There has been in force for some years in the adjoining Province of Quebec a compensation law which imposes upon employers greater burdens than they are subjected to by the law of this Province, and yet it has not been suggested that any such results as are prophesied by the Association have followed from the enactment of the Quebec law.

In order that it may be seen whether the division of the burden between the employer and workman is unfair, it may be well to point out how it will be divided under the provisions of the proposed law. The workman will bear (1) the loss of all his wages for seven days if his disability does not last longer than that, (2) the pain and suffering consequent upon his injury, (3) his outlay for medical or surgical treatment, nursing and other necessaries, (4) the loss of 45 per cent. of his wages while his disability lasts; and if his injury results in his being maimed or disfigured he must go through life bearing that burden also, while all that the employer will bear will be the payment of 55 per cent. of the injured workman's wages while the disability lasts.

"The burden which the workman is required to bear he cannot shift upon the shoulders of any one else, but the employer may and no doubt will shift his burden upon the shoulders of the community, or if he has any difficulty in doing that will by reducing the wages of his workmen compel them to bear part of it.

It is contended that it is unfair to require the employer to pay compensation during the lifetime of the workman because in many cases it will mean that the workman will receive compensation for a period during which if he had not been injured he would have been unable to earn wages. No doubt that will be the result in some cases, but on the other hand the workman loses any advantage he would have derived had he not been injured from an increase in his wages owing to an improvement in his position, or to an increase of his earning power, or to a rise in wages from any other cause because, except in the one case of a workman who is under the age of twenty-one years when injured, the compensation is based on the wages the workman was earning at the time of his injury.

It must also be borne in mind that the workman is required, as the price of the compensation he is to receive, to surrender his right to damages under the common law, if his injury happens under circumstances entitling him by the common law to recover or, if he would be entitled to recover only under the Workmen's Compensation for Injuries Act, his right to the like damages as he would be entitled to at common law limited, however, to an amount not exceeding three years' wages or $1,500, whichever is the larger sum.

According to the testimony of Mr. Wolfe (page 141), and there is no reason to doubt the accuracy of his statement, in Germany no less than 84 per cent. of the accidents incapacitate the workmen for less than fourteen weeks.

The nineteenth report of the Minister of Labour of France shows that the number of declared accidents in that country in the year 1910, after deducting those which occasioned an incapacity of four days or less, and omitting those

which happened in mines, mining and quarries, was 412,278, and that of these 1,650, or a little more than one third of one per cent., were fatal; 5,452, or about one and one third per cent., resulted in permanent disability, and 399,769, or about 97 per cent., resulted in temporary incapacity lasting for more than four days, and that in the remaining 5,407 cases, or about one and one third per cent., the results of the accidents were unknown.

In Great Britain the duration of disability in the cases terminating in 1908 was as follows:

Less than two weeks	11.2 per cent.
From two to three weeks	27.3 per cent.
From three to four weeks	18.4 per cent.
From four to thirteen weeks	37.7 per cent.
From thirteen to twenty-six weeks	4.1 per cent.
Over twenty-six weeks	1.3 per cent.

(24th Annual Report of the United States Commissioner of Labour, Vol. II, pp. 1,525-6).

Similar statistics for Ontario are not available, but it may, I think, fairly be assumed that the great bulk of the accidents for which compensation would be payable under the proposed law will incapacitate the workman for short periods—84 per cent. probably for less than fourteen weeks—and that the fatal accidents and those causing permanent disability, total and partial, will be comparatively few. If this assumption is warranted there would appear to be not only no reasonable ground for the apprehension of the Association that the employers will be unduly burdened with payments for compensation continuing during the lives of permanently injured workmen, but it is certain that under the proposed law as to the vast majority of accidents in every case in which there could be recovery at common law or under the Workmen's Compensation for Injuries Act, the workman will be worse off than he is at present, and his loss will be a direct gain to the employer, amounting annually to a very large sum.

My conclusion is that for all these reasons there is no valid ground for the objections of the Association to the scale of compensation which I have proposed.

I have, however, upon further consideration come to the conclusion that as the purpose of the proposed law is to protect the wage earner there is no reason why highly paid managers and superintendents of establishments, to which Part I is applicable, should be entitled to compensation out of the accident fund to an amount greater than the highest paid wage earner would be entitled to receive, and I therefore recommend that the draft bill be amended by adding the following to sub-section 1 of section 39:

"But not so as to exceed in any case the rate of $2,000 per annum."

If no such limit is prescribed the result would be that the small employer, in the case of an accident happening in another establishment to a highly paid official, would be unduly burdened. I propose $2,000 as the limit because that sum is probably the maximum amount earned in a year by the highest paid wage earner.

The only remaining provision of the draft bill to which I shall refer is section 68, which provides for a contribution by the Province to assist in defraying the expenses incurred in the administration of the act. I have not ventured to sug-

gest what this contribution should be but, in my judgment, it should be a substantial one. The effect of the proposed law will be to relieve the community from the burden of maintaining injured workmen and their dependants in cases in which under the operation of the existing law they are without remedy, and by the transfer from the courts to the Board of the determination of claims for compensation, which will lessen very much the cost of the administration of justice.

There is one matter which should be provided for for which provision has not been made in my draft bill. No provision is made for contribution by employers in the industries mentioned in schedule 2 towards defraying the cost of administration. This was an oversight, and I recommend that a section be added to the bill providing that "the employers in industries for the time being embraced in schedule 2 shall pay the Board such proportion of the expenses of the Board in the administration of this part as the Board may deem just and determine, and the sum payable by them shall be apportioned between such employers and assessed and levied upon them in like manner as in the case of assessments for contributions to the accident fund, and all the provisions of this part as to assessments shall apply *mutatis mutandis* to assessments made under the authority of this section."

It is the purpose of my draft bill to empower the Board in determining the proportions of the contributions to be made to the accident fund by employers to have regard to the hazard of each industry, and to fix the proportions of the assessments to be borne by the employer accordingly, and not to require that the proportions for each class or sub-class should be uniform; and also to permit the Board, if in its opinion the character of any class of industry justifies that being done, to require a larger contribution to the reserve fund by the employers in any such class than is required from employers in other classes.

The bill as drafted will, I think, accomplish this purpose, but if any doubt is entertained as to it, the bill can be amended by the addition of a section expressly so declaring.

I may be permitted to say, in conclusion, as the United States Commissioners said with reference to the bill drafted by them, that I submit the proposed law "not believing that it is the most perfect measure which could be devised nor the last word which can be said upon the subject, but as the result of careful investigation and the best thought of the Commission and as constituting at least a step in the direction of a just, reasonable, and practicable solution of the problem with which it deals."

I regret that some of its provisions do not commend themselves to the judgment of the Canadian Manufacturers Association, and on that account I have, since my last interim report, again carefully and anxiously considered those which are objected to and the objections that are urged against them, as well as the provisions of the Association's alternative proposition, but have seen no reason for doubting the correctness of the conclusion to which I had come, the results of which are embodied in the draft bill.

In these days of social and industrial unrest it is, in my judgment, of the gravest importance to the community that every proved injustice to any section or class resulting from bad or unfair laws should be promptly removed by the enactment of remedial legislation and I do not doubt that the country whose Legislature is quick to discern and prompt to remove injustice will enjoy, and that deservedly, the blessing of industrial peace and freedom from social unrest. Half measures which mitigate but do not remove injustice are, in my judgment, to be avoided. That the existing law inflicts injustice on the workingman is

admitted by all. From that injustice he has long suffered, and it would, in my judgment, be the gravest mistake if questions as to the scope and character of the proposed remedial legislation were to be determined, not by a consideration of what is just to the workingman, but of what is the least he can be put off with; or if the Legislature were to be deterred from passing a law designed to do full justice owing to groundless fears that disaster to the industries of the Province would follow from the enactment of it.

All of which is respectfully submitted.

W. R. Meredith,
Commissioner.

Dated at Osgoode Hall, Toronto,
the 31st day of October, 1913.

SECOND INTERIM REPORT ON

Laws Relating to the Liability of Employers

WITH DRAFT OF

An Act to provide for Compensation to Workmen for Injuries sustained and Industrial Diseases contracted in the course of their employment.

By

THE HON. SIR WILLIAM RALPH MEREDITH, C.J.O.,

COMMISSIONER.

PRINTED BY ORDER OF

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1913.

To the Honourable

SIR JOHN MORISON GIBSON, K.C.M.G.,

Lieutenant-Governor of the Province of Ontario, etc., etc., etc.

The undersigned has the honour to submit a further interim report on the subject of compensation to workmen for injuries sustained in the course of their employment.

The undersigned has carefully considered the matters into which he was by Your Honour's Commission appointed to inquire, and has embodied his conclusions in a draft Bill which is submitted herewith.

The blanks for the percentage of wages which appear in the draft Bill should in the opinion of the undersigned be filled in with the figures 55.

The undersigned has not yet been able to prepare his final report, but hopes to transmit it with the documentary and other evidence taken and a statement of his reasons for the conclusions at which he has arrived, during the present month.

All of which is respectfully submitted,

W. R. MEREDITH,

Commissioner.

OSGOODE HALL,
TORONTO, April 1st, 1913.

BILL

An Act to provide for Compensation to Workmen for Injuries sustained and Industrial Diseases contracted in the course of their employment.

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

PRELIMINARY.

1 This Act may be cited as *The Workmen's Compensation Act.* Short title.

2.—(1) In this Act:— Interpretation

(*a*) "Accident" shall include a wilful and an intentional act, not being the act of the workman and a fortuitous event occasioned by a physical or natural cause; "Accident."

(*b*) "Accident Fund" shall mean the fund provided for the payment of compensation under this Act; "Accident fund."

(*c*) "Board" shall mean Workmen's Compensation Board; "Board."

(*d*) "Construction" shall include re-construction, repair, alteration and demolition; "Construction."

(*e*) "Dependants" shall mean such of the members of the family of a workman as were wholly or partly dependent upon his earnings at the time of his death or who but for the incapacity due to the accident would have been so dependent; "Dependants."

"Employer." (*f*) "Employer" shall include every person having in his service under a contract of hiring or apprenticeship, written or oral, express or implied, any person engaged in any work in or about any establishment, undertaking, business or employment, and where the services of a workman are temporarily let or hired to another person by the person with whom the workman has entered into such a contract the latter shall be deemed to continue to be the employer of the workman whilst he is working for that other person;

"Employment." (*g*) "Employment" shall include employment in any part, branch or department of an establishment, undertaking or business;

"Industrial disease." (*h*) "Industrial disease" shall mean any of the diseases mentioned in Schedule 3, and any other disease which by the Regulations is declared to be an industrial disease;

"Industry." (*i*) "Industry" shall include establishment, undertaking, trade and business;

"Invalid." (*j*) "Invalid" shall mean physically or mentally incapable of earning;

"Manufacturing." (*k*) "Manufacturing" shall include making, preparing, altering, repairing, ornamenting, printing, finishing, packing, assembling the parts of and adapting for use or sale any article or commodity;

"Medical referee." (*l*) "Medical Referee" shall mean medical referee appointed by the Board;

"Member of the family." (*m*) "Member of the Family" shall mean and include wife, husband, father, mother, grandfather, grandmother, stepfather, stepmother, son, daughter, grandson, granddaughter, stepson, stepdaughter, brother, sister, half-brother and half-sister, and a person standing in *loco parentis* to the workman, whether related to him by consanguinity or not so related, and where the workman is the parent or grandparent of an illegitimate child, shall include such child, and where the workman is an illegitimate child shall include his parents and grandparents;

(*n*) "Outworker" shall mean a person to whom articles or materials are given out to be made up, cleaned, washed, altered, ornamented, finished, repaired, or adapted for sale in his own home or on other premises not under the control or management of the person who gave out the articles or materials; "Outworker."

(*o*) "Regulations" shall mean regulations made by the Board under the authority of this Act; "Regulations."

(*p*) "Workman" shall include a person who has entered into or works under a contract of service or apprenticeship, written or oral, express or implied, whether by way of manual labour, clerical work, or otherwise, but shall not include an out-worker. "Workman."

(2) Words in the singular number interpreted by subsection 1 shall have a corresponding meaning when used in the plural. Interpretation of words used in number.

(3) The exercise and performance of the powers and duties of:— Municipal corporations, etc., and school boards.

(*a*) a municipal corporation;

(*b*) a public utilities commission;

(*c*) any other commission having the management and conduct of any work or service owned by or operated for a municipal corporation;

(*d*) the board of trustees of a police village; and

(*e*) a school board,

shall for the purposes of this Act be deemed as the trade or business of the corporation, commission, board of trustees or school board.

PART I.

COMPENSATION.

Compensation to workmen.

3.—(1) Where in any employment, personal injury by accident arising out of and in the course of the employment is caused to a workman his employer shall be liable to provide or to pay compensation in the manner and to the extent hereinafter mentioned except where the injury:—

Exceptions.

(*a*) does not disable the workman for the period of at least seven days from earning full wages at the work at which he was employed;

(*b*) is attributable solely to the serious and wilful misconduct of the workman unless the injury results in death or serious disablement.

Presumptions.

(2) Where the accident arose out of the employment, unless the contrary is shown, it shall be presumed that it occurred in the course of the employment, and where the accident occurred in the course of the employment, unless the contrary is shown, it shall be presumed that it arose out of the employment.

Compensation to date from disability.

(3) Where compensation for disability is payable it shall be computed and be payable from the date of the disability.

Section not to apply to casual employment.

(4) This section shall not apply to a person whose employment is of a casual nature and who is employed otherwise than for the purposes of the employer's trade or business.

Employers individually liable.

4. Employers in the industries mentioned in Schedule 2 shall be liable individually to pay the compensation.

Employers liable to contribute to the accident fund.

5. Employers in industries for the time being embraced in Schedule 1, shall be liable to contribute to the accident fund as hereinafter provided, but shall not be liable individually to pay the compensation.

Accident happening out of Ontario.

6.—(1) Where the place or chief place of business of an employer is situate in Ontario and an accident happens while the workman is employed elsewhere than in Ontario which would entitle him or his dependants to compensation under this Part if it had happened in Ontario the workman and his dependants shall be entitled to compensation under this Part if the usual place of employment of the workman is in Ontario and his employment out of Ontario has lasted less than six months.

(2) Except as provided by subsection 1 no compensation shall be payable under this Part where the accident to the workman happens out of Ontario unless it happens on a steamboat, ship or vessel, or on a railway, and the nature of the employment is such that in the course of the work or service which the workman performs it is required to be performed both within and without Ontario.

Where compensation payable by law of foreign country, workman to elect.

7.—(1) Where by the law of the country or place in which the accident happens the workman or his dependants are entitled to compensation in respect of it they shall be bound within three months after the happening of the accident or in case it results in death within three months after the death to elect whether they will claim compensation under the law of such country or place or under this Part and to give notice of such election, and if such election is not made and notice given it shall be presumed that they have elected not to claim compensation under this Part.

How election to be made.

(2) Notice of the election, where the compensation under this Part is payable by the employer individually, shall be given to the employer, and where the compensation is payable out of the accident fund to the Board and shall be given in both cases within three months after the happening of the accident.

Dependants not resident in Ontario.

8.—(1) Where a dependant is not a resident of Ontario he shall not be entitled to compensation unless by the law of the place or country in which he resides the dependants of a workman to whom an accident happens in such place or country if resident in Ontario would be entitled to compensation and where such dependants would be entitled to compensation under such law the compensation to which the non-resident dependant shall be entitled under this Part shall not be greater than the compensation payable in the like case under that law.

Exception.

(2) Notwithstanding the provisions of subsection 1 the Board may make such allowance in lieu of compensation to any such non-resident dependant as may be deemed proper and may pay the same out of the accident fund.

Where workman entitled to action against person other than employer, action may be brought.

9—(1) Where an accident happens to a workman in the course of his employment under such circumstances as entitle him or his dependants to an action against some person other than his employer the workman or his dependants if entitled to compensation under this Part may claim such compensation or may bring such action.

Workman entitled to difference between compensation under Act and amount collected.

(2) If an action is brought and less is recovered and collected than the amount of the compensation to which the workman or his dependants are entitled under this Part the difference between the amount recovered and collected and the amount of such compensation shall be payable as compensation to such workman or his dependants.

Subrogation of employer or Board to rights of workman.

(3) If the workman or his dependants elect to claim compensation under this Part the employer, if he is individually liable to pay it, and the Board if the compensation is payable out of the accident fund shall be subrogated to the rights of the workman or his dependants and may maintain an action in his or their names against the person against whom the action lies and any sum recovered from him by the Board shall form part of the accident fund.

How Election to be made.

(4) The election shall be made and notice of it shall be given within the time and in the manner provided by subsection 2 of section 7.

Sub-contractors.

10.—(1) Where the compensation is payable by the employer individually and a person, in this section referred to as the principal, in the course of or for the purposes of his trade or business contracts with any other person, in this section referred to as the contractor, for the execution by or under the contractor of the whole or any part of any work undertaken by the principal, the principal shall be liable to pay to any workman employed in the execution of the work the compensation which he would have been liable to pay if that workman had been immediately employed by him.

(2) Where compensation is claimed from the principal in this Part reference to the principal shall be substituted for reference to the employer, except that the amount of the compensation shall be calculated with reference to the earnings of the workman under the employer by whom he is immediately employed.

(3) Where the principal is liable to pay compensation under this section he shall be entitled to be indemnified by any person who would have been liable to pay compensation to the workman independently of this section and all questions as to the right to and the amount of any such indemnity shall be determined by the Board.

(4) Nothing in this section shall prevent a workman claiming compensation under this Part from the contractor instead of the principal.

(5) This section shall not apply where the accident happens elsewhere than on or in or about premises on which the principal has undertaken to execute the work or which are otherwise under his control or management.

Member of family of employer employed as workman.

11. Where compensation is payable out of the accident fund, a member of the family of an employer shall not be entitled to compensation unless he was at the time of the accident carried on the pay roll of the employer and his wages were included in the then last statement furnished to the Board under section 76 nor for the purpose of determining the compensation shall his earnings be taken to be more than the amount of his wages, as shown by such pay roll and statement.

Employer carried on payroll entitled to compensation.

12. Where compensation is payable out of the accident fund an employer who is carried on his pay-roll at a salary or wages which the Board deems reasonable shall if such salary or wages were included in the then last statement furnished to the Board under section 76 be deemed to be a workman within the meaning of this Act and shall be entitled to compensation accordingly, but for the purpose of determining the compensation his earnings shall not be taken to be more than the amount of his salary or wages as shown by such pay roll and statement.

No action to be brought to recover compensation.

13. No action shall lie for the recovery of the compensation whether it is payable by the employer individually or out of the accident fund, but all claims for compensation shall be heard and determined by the Board.

Workman entitled to compensation residing out of Ontario.

14. If a workman receiving a weekly or other periodical payment ceases to reside in Ontario he shall not thereafter be entitled to receive any such payment unless a medical referee certifies that the incapacity resulting from the injury is likely to be of a permanent nature and if a medical referee so certifies the workman shall be entitled quarterly to the amount of the weekly or other periodical payment accruing due if he proves in such manner as may be prescribed by the Regulations his identity and the continuance of the incapacity in respect of which the same is payable.

Compensation to be in lieu of all actions and rights of action against ~~employer~~

15. The right to compensation provided for by this Part shall be in lieu of all rights and rights of action, statutory or otherwise, to which a workman or his dependants are or may be entitled against the employer of such workman for or by reason of any accident which happens to him while in the employment of such employer, and after the day of 191 , and no action in respect thereof shall thereafter lie.

Right to compensation may not be waived.

16. It shall not be competent for a workman to agree with his employer to waive or to forego any of the benefits to which he or his dependants are or may become entitled under this Part and every agreement to that end shall be absolutely void. "Contracting out"

Agreement as to compensation not valid unless approved by the Board.

17.—(1) Where the compensation is payable by an employer individually no agreement between a workman or dependant and the employer for fixing the amount of the compensation or by which the workman or dependant accepts or agrees to accept a stipulated sum in lieu or in satisfaction of it shall be binding on the workman or dependant unless it is approved by the Board.

Exception.

(2) Subsection 1 shall not apply to compensation for temporary disability lasting for less than four weeks.

Deduction not to be made from wages.

18.—(1) It shall not be lawful for an employer, either directly or indirectly, to deduct from the wages of any of his workmen any part of any sum which the employer is or may become liable to pay to the workman as compensation under this Part or to require or to permit any of his workmen to contribute in any manner towards indemnifying the employer against any liability which he has incurred or may incur under this Part.

Penalty.

(2) Every person who contravenes any of the provisions of subsection 1 shall for every such contravention incur a penalty not exceeding $50 and shall also be liable to repay to the workman any sum which has been so deducted from his wages or which he has been required or permitted to pay in contravention of subsection 1.

Compensation not assignable or liable to attachment.

19. Unless with the approval of the Board no sum payable as compensation or by way of commutation of any weekly or other periodical payment in respect of it shall be capable of being assigned, charged or attached, nor shall it pass by operation of law except to a personal representative nor shall any claim be set off against it.

Notice of accident to be given.

20.—(1) Subject to subsection 5 compensation shall not be payable unless notice of the accident is given as soon as practicable after the happening of it and before the workman has voluntarily left the employment in which he was injured and unless the claim for compensation is made within six months from the happening of the accident or in case of death within six months from the time of death.

Nature of notice.

(2) The notice shall give the name and address of the workman and shall be sufficient if it states in ordinary lan-

guage the cause of the injury and where the accident happened.

Service of notice.

(3) The notice may be served by delivering it at or sending it by registered post addressed to the place of business or the residence of the employer, or where the employer is a body of persons, corporate or unincorporate, by delivering it at or sending it by registered post addressed to the employer at the office or if there are more offices than one at any of the offices of such body of persons.

(4) Where the compensation is payable out of the accident fund the notice shall also be given to the Board by delivering it to or at the office of the Secretary or by sending it to him by registered post addressed to his office.

Failure to give, or defect in notice not to affect right to compensation in certain cases.

(5) Failure to give the prescribed notice or any defect or inaccuracy in a notice shall not bar the right to compensation if in the opinion of the Board the employer was not prejudiced thereby or where the compensation is payable out of the accident fund if the Board is of opinion that the claim for compensation is a just one and ought to be allowed.

Workman to submit to examination.

21.—(1) A workman who claims compensation, or to whom compensation is payable under this Part shall if so required by his employer submit himself for examination by a duly qualified medical practitioner provided and paid for by the employer and shall if so required by the Board submit himself for examination by a medical referee.

In accordance with regulations.

(2) A workman shall not be required at the request of his employer to submit himself for examination otherwise than in accordance with the Regulations.

In case of difference between medical examiners, etc., reference may be made to medical referee.

22.—(1) Where a workman has upon the request of his employer submitted himself for examination, or has been examined by a duly qualified medical practitioner selected by himself, and a copy of the report of the medical practitioner as to the workman's condition has been furnished in the former case by the employer to the workman and in the latter case by the workman to the employer the Board may, on application of either of them, refer the matter to a medical referee.

Certificate of medical referee final.

(2) The medical referee to whom a reference is made under the next preceding subsection or who has examined the workman by the direction of the Board under subsection 1 of section 21, shall certify to the Board as to the condition of the workman and his fitness for employment, specifying

where necessary the kind of employment and his certificate shall be conclusive as to the matters certified.

Failure to submit to examination or obstructing it.

(3) If a workman does not submit himself for examination when required to do so as provided by subsection 1 of section 21, or on being required to do so does not submit himself for examination to a medical referee under that subsection or under subsection 1 of this section, or in any way obstructs any examination, his right to compensation or if he is in receipt of a weekly or other periodical payment his right to it shall be suspended until such examination has taken place.

Review of compensation.

23. Any weekly or other periodical payment to a workman may be reviewed at the request of the employer or of the workman, if the compensation is payable by the employer individually, or, if the compensation is payable out of the accident fund, of the Board's own motion or at the request of the workman and on such review the Board may put an end to or diminish or may increase such payment to a sum not beyond the maximum hereinafter prescribed.

Increase of compensation to workman under 21.

24. Where the workman was at the date of the accident under twenty-one years of age and the review takes place more than six months after the accident the amount of a weekly payment may be increased to any sum not exceeding per cent. of the weekly sum which if he had remained uninjured he would probably have been earning at the date of the review.

Commutation of payments for lump sum.

25.—(1) Where the compensation is payable by an employer individually, the employer may, with the consent of the workman or dependant to whom it is payable and with the approval of the Board, but not otherwise, and where it is payable out of the accident fund the Board may commute the weekly or other periodical payments payable to a workman or a dependant for a lump sum.

Lump sum to be paid to Board.

(2) Where the lump sum is payable by the employer individually it shall be paid to the Board.

Application of lump sum.

(3) The lump sum may be:—

(*a*) applied in such manner as the workman or dependant may direct;

(*b*) paid to the workman or dependant;

(*c*) invested by the Board and applied to meet the future payments as they become due;

(*d*) paid to trustees to be used and employed upon and subject to such trusts and for the benefit of such persons as, in case it is payable by the employer individually, the workman or dependant directs and the Board approves, or, if payable out of the accident fund, as may be desired by the workman or dependant and approved by the Board;

(*e*) applied partly in one and partly in another or others of the modes mentioned in clauses (*a*), (*b*), (*c*) and (*d*),

as the Board may determine.

Commutation of weekly payments.

26.—(1) Where a weekly or other periodical payment is payable by the employer individually and has been continued for not less than six months, the Board may on the application of the employer allow the liability therefor, to be commuted by the payment of a lump sum of such an amount as, if the incapacity is permanent, would purchase an immediate annuity from a life insurance company approved by the Board, equal to seventy-five per cent. of the annual value of the weekly or other periodical payment, and in other cases of such an amount as the Board may deem reasonable.

Application of lump sum

(2) The sum for which a payment may be commuted under subsection 1. shall be paid to the Board and shall be dealt with in the manner provided by section 25.

Insurance company required to commute weekly or other periodical payment.

27.—(1) Where an employer insured by a contract of insurance of an insurance company or any other underwriter is individually liable to make a weekly or other periodical payment to a workman or his dependants and the payment has continued for more than six months the liability shall, if the Board so directs before the expiration of twelve months from the commencement of the incapacity of the workman or his death, if the accident resulted in death, be commuted by the payment of a lump sum in accordance with the next preceding section, and the company or underwriter shall pay the lump sum to the Board, and it shall be dealt with in the manner provided by section 25.

(2) This section shall not apply to a contract of insurance entered into before the passing of this Act.

Board may require employer to pay sum sufficient to commute.

28. The Board may require an employer who is individually liable to pay the compensation to pay to the Board a sum sufficient to commute in accordance with section 26, any weekly or other periodical payments which are

payable to the workman during his life or to his widow during her widowhood and such sum shall be applied by the Board in the payment of such weekly or other periodical payments as they from time to time become payable, but if the sum paid to the Board is insufficient to meet the whole of such weekly or other periodical payments the employer shall nevertheless be liable to make such of them as fall due after the sum paid to the Board is exhausted.

Board may require employer to insure his workmen.

29. The Board may require an employer who is individually liable to pay the compensation to insure his workmen and keep them insured against accidents in respect of which he may become liable to pay compensation in a company approved by the Board for such amount as the Board may direct and in default of his doing so the Board may cause them to be so insured and may recover the expense incurred in so doing from the employer.

Where employer insured Board may require insurer to pay amount payable to employer directly to injured workman.

30.—(1) Where an employer who is individually liable to pay the compensation is insured against his liability to pay compensation, the Board may require the insurance company or other underwriter to pay the sum which under the contract of insurance such company or underwriter would be liable to pay to the employer in respect of an accident to a workman who becomes, or whose dependants become entitled to compensation under this Part, directly to the Board in discharge or in discharge *pro tanto* of the compensation to which such workman or his dependants are found to be entitled.

Notice to be given to insurer.

(2) In any case to which subsection 1 applies where a claim for compensation is made notice of the claim shall be given to the insurance company or other underwriter and to the employer and the Board shall determine not only the question of the right of the workman or dependant to compensation but also the question whether the whole or any part of it should be paid directly by the insurance company or other underwriter as provided by subsection 1.

Sect. 25 to apply.

(3) Section 25 shall apply to the compensation payable to the Board under subsection 1.

In case of permanent disability employer may be required to pay capital sum,

31.—(1) Where the accident causes permanent disability, either total or partial or the death of the workman and the compensation is payable by the employer individually the Board may require the employer to pay to the Board such sum as in its opinion will be sufficient with the interest thereon if invested so as to earn interest at the rate of 5 per cent. per annum to meet the future payments to be made to the workman or his dependants, and such

sum when paid to the Board shall be invested by it and shall form a fund to meet such future payments.

(2) The Board, instead of requiring the employer to make the payment provided for by subsection 1, may require him to give such security as the Board may deem sufficient for the future payments. or to give security for payment of compensation

32. Where a right to compensation is suspended under the provisions of this Part no compensation shall be payable in respect of the period of suspension. Compensation not payable during suspension.

SCALE OF COMPENSATION.

33.—(1) Where death results from an injury the amount of the compensation shall be:— Compensation in case of death.

(*a*) The necessary expenses of the burial of the workman not exceeding $75.

(*b*) Where the widow or an invalid husband is the sole dependant a monthly payment of $20.

(*c*) Where the dependants are a widow or an invalid husband and one or more children, a monthly payment of $20, with an additional monthly payment of $5 for each child under the age of 16 years, not exceeding in the whole $40.

(*d*) Where the dependants are children a monthly payment of $10 to each child under the age of 16 years, not exceeding in the whole, $40.

(*e*) Where the workman was under the age of 21 years, and the dependants are his parents or one of them, a monthly payment of $20, ceasing when the workman would have attained the age of 21 years.

(*f*) Where the sole dependants are persons other than those mentioned in the foregoing clauses a sum reasonable and proportionate to the pecuniary loss to such dependants occasioned by the death, to be determined by the Board, but not exceeding in the whole $40 per month.

(2) Where permanent total disability results from the injury the amount of the compensation shall be a weekly payment during the life of the workman equal to per cent. of his average weekly earnings during the previous Compensation in case of permanent total disability.

twelve months if he has been so long employed, but if not then for any less period during which he has been in the employment of his employer.

Duration of payments under clause (f) of subsection 1.

(3) In the case provided for by clause (*f*) of subsection 1, the payments shall continue only so long as in the opinion of the Board it might reasonably have been expected had the workman lived he would have continued to contribute to the support of the dependants.

Marriage of widow.

34.—(1) If a dependant widow marries the monthly payments to her shall cease, but she shall be entitled in lieu of them to a lump sum equal to the monthly payments for two years and such lump sum shall be payable within one month after the day of her marriage.

Exception.

(2) Subsection 1 shall not apply to payments to a widow in respect of a child.

Where workman leaves no dependant, expense of medical attendance and burial may be ordered to be paid.

35. Where a workman leaves no dependants such sum as the Board may deem reasonable for the expenses of his medical attendance and of his burial shall be paid to the persons to whom such expenses are due.

Partial or temporary disability.

36. Where the disability is partial or temporary the compensation shall be a weekly payment of a sum proportionate to the impairment of the earning capacity of the workman not exceeding in any case per cent. of his average weekly earnings ascertained in the manner provided by section 39, and the compensation shall be payable while the disability lasts.

Compensation not to exceed percentage of wages in certain cases

37. The compensation payable as provided by subsection 1 of section 33, shall not in any case exceed per cent. of the average monthly earnings of the workman calculated in the manner provided by section 39, and if the compensation payable under that subsection would in any case exceed that percentage it shall be reduced accordingly, and where several persons are entitled to monthly payments the payments shall be reduced proportionately.

When payments to child to cease.

38. A monthly payment in respect of a child shall cease when the child attains the age of 16 years.

How average earnings to be computed.

39.—(1) Average earnings shall be computed in such a manner as is best calculated to give the rate per week or month at which the workman was remunerated.

(2) Where owing to the shortness of the time during which the workman was in the employment of his employer or the casual nature of his employment or the terms of it it is impracticable to compute the rate of remuneration as of the date of the accident regard may be had to the average weekly or monthly amount which during the twelve months previous to the accident was being earned by a person in the same grade employed at the same work by the same employer, or if there is no person so employed then by a person in the same grade employed in the same class of employment and in the same locality. In case of shortness of service or its casual nature.

(3) Where the workman has entered into concurrent contracts of service with two or more employers under which he worked at one time for one of them and at another time for another of them his average earnings shall be computed as if his earnings under all such contracts were earnings in the employment of the employer for whom he was working at the time of the accident. Where two or more employers

(4) Employment by the same employer shall mean employment by the same employer in the grade in which the workman was employed at the time of the accident uninterrupted by absence from work due to illness or any other unavoidable cause. Meaning of employment by same employer. concurrently.

(5) Where the employer was accustomed to pay the workman a sum to cover any special expenses entailed on him by the nature of his employment that sum shall not be reckoned as part of his earnings. Special expenses not to be included.

40. In fixing the amount of a weekly or monthly payment regard shall be had to any payment, allowance or benefit which the workman may receive from his employer during the period of his incapacity, including any pension, gratuity or other allowance provided wholly at the expense of the employer. Matters to be considered in fixing payments.

41. The amount of the weekly payment in the case of partial incapacity shall in no case exceed the difference between the average weekly earnings of the workman before the accident and the average weekly amount which he is earning or is able to earn in some suitable employment or business after the accident but shall bear such relation to the amount of that difference as under the circumstances appears just. Payment not to exceed difference between wages earned and what may be earned.

42. Where there are both total and partial dependants the compensation may be allotted partly to the total and partly to the partial dependants. Compensation to dependants.

Board may apply payment for benefit of children

43. Where the Board is of opinion that for any reason it is necessary or desirable that a payment in respect of a child should not be made directly to its parent, or where a dependant child has no parent or guardian, the Board may direct that the payment be made to such person or be applied in such manner as the Board may deem best for the advantage of the child.

THE WORKMEN'S COMPENSATION BOARD.

Workmen's Compensation Board, how constituted.

44. There is hereby constituted a Commission for the administration of this Part to be called "The Workman's Compensation Board," which shall consist of three members to be appointed by the Lieutenant-Governor in Council and shall be a body corporate.

Chairman,

45. One of the Commissioners shall be appointed by the Lieutenant-Governor in Council to be the Chairman of the Board and he shall hold that office while he remains a member of the Board and another of the Commissioners shall be appointed by the Lieutenant-Governor in Council Vice-Chairman of the Board.

Vice-chairman.

When vice-chairman may act.

46. In the absence of the Chairman or in case of his inability to act or if there is a vacancy in the office, the Vice-chairman may act as and shall have all the powers of the Chairman.

Presumption where vice-chairman has acted.

47. Where the Vice-Chairman appears to have acted for or instead of the Chairman it shall be conclusively presumed that he so acted for one of the reasons mentioned in the next preceding subsection.

Tenure of office of commissioners.

48. Each Commissioner shall, subject to section 49 hold office during good behaviour for a period of ten years but may be removed at any time for cause.

Age limit.

49. Unless otherwise directed by the Lieutenant-Governor in Council a Commissioner shall cease to hold office when he attains the age of 75 years.

Re-appointment.

50. A Commissioner if not disqualified by age shall be eligible for re-appointment.

Commissioners to give whole time to duties.

51. Each of the Commissioners shall devote the whole of his time to the performance of his duties under this Part.

Salaries.

52. The salary of the Chairman shall be $ per annum, and the salary of each of the other Commissioners shall be $ per annum.

Quorum.

53. The presence of two Commissioners shall be necessary to constitute a quorum of the Board.

Vacancy not to impair authority if two members remain.

54. A vacancy in the Board shall not if there remain two members of it impair the authority of such two members to act.

Powers of Board.

55. The Board shall have the like powers as the Supreme Court for compelling the attendance of witnesses and of examining them under oath, and compelling the production of books, papers, documents and things.

Commissioners to be disqualified in certain cases.

56.—(1) A Commissioner shall not directly or indirectly:—

(*a*) have, purchase, take or become interested in any industry, to which this Part applies or any bond, debenture or other security of the person owning or carrying it on;

(*b*) be the holder of shares, bonds, debentures or other securities of any company which carries on the business of employers' liability or accident insurance;

(*c*) have any interest in any device, machine, appliance, patented process or article which may be required or used for the prevention of accidents.

(2) If any such industry, or interest therein, or any such share, bond, debenture, security, or thing comes to or becomes vested in a Commissioner by will or by operation of law and he does not within three months thereafter sell and absolutely dispose of it he shall cease to hold office.

Offices of Board and Sittings.

57. The offices of the Board shall be situated in the city of Toronto and its sittings shall be held there, except where it is expedient to hold sittings elsewhere, and in that case sittings may be held in any part of Ontario.

Proceedings of Board.

58. The Commissioners shall sit at such times and conduct their proceedings in such manner as they may deem most convenient for the proper discharge and speedy despatch of business.

Appointment of secretary and officers.

59.—(1) The Board shall appoint a Secretary and a Chief Medical Officer and may appoint such auditors, actuaries, accountants, inspectors, medical referees, clerks and servants as the Board may deem necessary for carrying out the provisions of this Part and may prescribe their duties

and, subject to the approval of the Lieutenant-Governor in Council, may fix their salaries.

Tenure of office.

(2) Every person so appointed shall hold office during the pleasure of the Board.

Jurisdiction of Board.

60.—(1) The Board shall have exclusive jurisdiction to examine into, hear and determine all matters and questions arising under this Part and the action or decision of the Board thereon shall be final and conclusive and shall not be open to question or review in any court and no proceedings by or before the Board shall be restrained by injunction, prohibition or other process or proceeding in any court or be removable by *certiorari* or otherwise into any court.

Power to reconsider.

(2) Nothing in subsection 1 shall prevent the Board from reconsidering any matter which has been dealt with by it or from rescinding, altering or amending any decision or order previously made, all which the Board shall have authority to do.

Power of Board as to awarding Compensation for Expenses.

61. The Board may award such sum as it may deem reasonable to the successful party to a contested claim for compensation or to any other contested matter as compensation for the expenses he has been put to by reason of or incidental to the contest and an order of the Board for the payment by an employer of any sum so awarded when filed in the manner provided by section 63 shall become a judgment of the Court in which it is filed and may be enforced accordingly.

Board may act on report of officers.

62. The Board may act upon the report of any of its officers and any enquiry which it shall be deemed necessary to make may be made by any one of the Commissioners or by an officer of the Board or some other person appointed to make the enquiry, and the Board may act upon his report as to the result of the inquiry.

Enforcement of orders of Board.

63. An order of the Board for the payment of compensation by an employer who is individually liable to pay the compensation or any other order of the Board for the payment of money made under the authority of this Part, or a copy of any such order certified by the Secretary to be a true copy may be filed with the clerk of any county or district court and when so filed shall become an order of that court and may be enforced as a judgment of the court.

Regulations.

64.—(1) The Board may make such Regulations as may be deemed expedient for carrying out the provisions of this Part and a certified copy of every regulation so made

shall be transmitted forthwith to the Provincial Secretary and any regulation may within one month after it has been received by the Provincial Secretary be disallowed by the Lieutenant-Governor in Council. Power to Lieutenant-Governor to disallow.

(2) After the period for disallowance has expired every regulation which has not been disallowed shall become effective and shall be forthwith published in the *Ontario Gazette*. Publication.

(3) Every person who contravenes any such regulation after it has become effective or any rule of an association formed as provided by section 97, which has been approved and ratified as provided by that section shall for every contravention incur a penalty not exceeding $50. Penalty.

65. The accounts of the Board shall be audited by the Provincial Auditor or by an auditor appointed by the Lieutenant-Governor in Council for that purpose and the salary or remuneration of the last mentioned auditor shall be paid by the Board. Audit of accounts.

66.—(1) The Board shall on or before the day of in each year make a report to the Lieutenant-Governor of its transactions during the next preceding calendar year and such report shall contain such particulars as the Lieutenant-Governor in Council may prescribe. Report to Lieutenant-Governor.

(2) Every such report shall be forthwith laid before the Assembly if the Assembly is then in session and if it is not then in session within fifteen days after the opening of the next session. Report to be laid before Assembly.

67. The Superintendent of Insurance or an officer of his Department named by him for that purpose shall once in each year and oftener if so required by the Lieutenant-Governor in Council examine into the affairs and business of the Board for the purpose of determining as to the sufficiency of the accident fund and shall report thereon to the Lieutenant-Governor in Council. Superintendent of insurance to examine into affairs and business of Board.

CONTRIBUTION BY THE PROVINCE.

68. To assist in defraying the expenses incurred in the administration of this Part there shall be paid to the Board out of the Consolidated Revenue Fund such annual sum not exceeding $ as the Lieutenant-Governor in Council may direct and such sum shall be payable in equal quarterly sums on the first day of each quarter commencing on the day of 19 . Provincial grant towards costs of administration.

ACCIDENT FUND.

How accident fund to be provided.

Compensation payable out of accident fund in certain cases.

69.—(1) An accident fund shall be provided by contributions to be made in the manner hereinafter provided, by the employers in the classes or groups of industries, for the time being embraced in Schedule 1, and compensation payable in respect of accidents which happen in any industry, embraced in any of such classes or groups, shall be payable and shall be paid out of the accident fund.

Industries in Schedule 2 not to contribute.

(2) Notwithstanding the generality of the description of the classes mentioned in Schedule 1 none of the industries embraced in Schedule 2 shall form part of or be deemed to be included in any of such classes, unless it is added to Schedule 1 by the Board under the authority conferred by this Part.

Sufficiency of accident fund to be maintained.

70. It shall be the duty of the Board at all times to maintain the accident fund so that with the reserves it shall be sufficient to meet all the payments to be made out of the fund in respect of compensation as they become payable and so as not unduly or unfairly to burden the employers in any class in future years with payments which are to be made in those years in respect of accidents which have previously happened.

Industries not specifically included in classes.

71. If any trade or business connected with the industries of:—

> Lumbering, mining, quarrying, fishing, manufacturing, building, construction, engineering, transportation, operation of electric power lines, waterworks and other public utilities, navigation, operation of boats, ships, tugs and dredges, operation of grain elevators and warehouses; teaming, scavenging and street cleaning; painting, decorating and renovating, dyeing and cleaning;

or any occupation incidental thereto or immediately connected therewith, not included in Schedule 2, is not embraced in any of the classes mentioned in Schedule 1, the Board shall assign it to an appropriate class or form an additional class or classes embracing the trades or businesses not so embraced, and until that is done such trades and businesses shall together constitute a separate group or class and shall be deemed to be included in Schedule 1.

72.—(1) The Board shall have jurisdiction and authority to:— Jurisdiction of Board

(*a*) re-arrange any of the classes for the time being, embraced in Schedule 1, and withdraw from any class any industry embraced in it and transfer it wholly or partly to any other class or form it into a separate class; As to re-arrangement of classes.

(*b*) establish other classes embracing any of the industries which are mentioned in Schedule 2, or are not embraced in any of the classes in Schedule 1; Establishing other classes.

(*c*) add to any of the classes mentioned in Schedule 1, any industry which is not embraced in any of such classes. Adding to classes.

(2) Where in the opinion of the Board the hazard to workmen in any of the industries embraced in a class is less than that in another or others of such industries, or where for any other reason it is deemed proper to do so, the Board may sub-divide the class into sub-classes and if that is done the Board shall fix the percentages or proportions of the contributions to the accident fund which are to be payable by the employers in each sub-class. Apportionment of burden of assessment according to hazard of business, etc.

(3) Separate accounts shall be kept of the amounts collected and expended in respect of every class and sub-class, but for the purpose of paying compensation the accident fund shall, nevertheless, be deemed one and indivisible. Separate accounts to be kept for each class and sub-class.

(4) Where a greater number of accidents has happened in any industry than in the opinion of the Board ought to have happened if proper precautions had been taken for the prevention of accidents in it, or where in the opinion of the Board the ways, works, machinery or appliances in any industry are defective, inadequate or insufficient the Board may add to the amount of any contribution to the accident fund for which an employer is liable in respect of such industry such a percentage thereof as the Board may deem just and may assess and levy the same upon such employer, or the Board may exclude such industry from the class in which it is embraced, and if it is so excluded the employer shall be individually liable to pay the compensation to which any of his workmen or their dependants may thereafter become entitled. Varying amounts of assessment in certain cases. Additional percentage.

Collection and application of additional percentage.

(5) Any additional percentage levied and collected under the next preceding subsection shall be added to the accident fund or applied in reduction of the assessment upon the other employers in the class or sub-class to which the employer from whom it is collected belongs as the Board may determine.

Withdrawing classes.

73.—(1) The Board may in the exercise of the powers conferred by the next preceding section withdraw or exclude from a class industries in which not more than a stated number of workmen are usually employed and may afterwards add them to the class or classes from which they have been withdrawn, and any industry so withdrawn or excluded shall not thereafter be deemed to be included in Schedule 1 or Schedule 2.

Employers in industries withdrawn under s.s. 1 may elect to become members of class.

(2) Where industries are withdrawn or excluded from a class under the authority of subsection 1, an employer in any of them may, nevertheless, elect to become a member of the class to which, but for the withdrawal or exclusion he would have belonged, and if he so elects he shall be a member of that class and as such liable to contribute to the accident fund, and his industry shall be deemed to be embraced in Schedule 1.

(3) Notice of the election shall be given to the Secretary of the Board and the election shall be deemed to have been made when the notice is received by him.

Powers may be exercised as occasion requires.

74. The powers conferred by the next preceding two sections may be exercised from time to time and as often as in the opinion of the Board occasion may require.

When Regulations become effective.

75. A regulation or order made by the Board under the authority of clause (*a*) or clause (*b*) of subsection 1 of section 72, shall not have any force or effect unless approved by the Lieutenant-Governor in Council, and when so approved it shall be published in the *Ontario Gazette* and shall take effect on the expiration of one month from the first publication of it in the *Ontario Gazette*.

Publication.

STATEMENTS TO BE FURNISHED BY EMPLOYERS.

Statements to be furnished by employers.

76.—(1) Every employer shall on or before the day of next and yearly thereafter, on or before the day of , or on or before such date as shall be prescribed by the Board prepare and transmit to the Board a statement in detail of the names and ages of all his employees and the amount of the wages earned by each

of them during the year then last past verified by the statutory declaration of the employer or the manager of the business, or where the employer is a corporation by an officer of the corporation having a personal knowledge of the matters to which the declaration relates.

Separate statements as to branches, etc.

(2) Where the business of the employer embraces more than one branch of business or class of industry the Board may require separate statements to be made as to each branch or class of industry, and such statements shall be made, verified, and transmitted as provided by subsection 1.

Failure to furnish statements.

(3) If any employer does not make and transmit to the Board the prescribed statement within the prescribed time the Board may base any assessment or supplementary assessment thereafter made upon him on such sum as in its opinion is the probable amount of the pay roll of the employer and the employer shall be bound thereby, but if it is afterwards ascertained that such amount is less than the actual amount of the pay roll the employer shall be liable to pay to the Board the difference between the amount for which he was assessed and the amount for which he would have been assessed on the basis of his pay roll.

Penalty.

(4) If an employer does not comply with the provisions of subsection 1 or subsection 2, or if any statement made in pursuance of their provisions is not a true and accurate statement of any of the matters required to be set forth in it the employer for every such non-compliance and for every such statement shall incur a penalty not exceeding $500.

Assessment may be made to correspond with pay-rolls.

77.—(1) If a statement is found to be inaccurate the assessment shall be made on the true amount of the pay roll as ascertained by such examination and enquiry or if an assessment has been made against the employer on the basis of his pay-roll being as shown by the statement the employer shall pay to the Board the difference between the amount for which he was assessed and the amount for which he would have been assessed if the amount of the pay-roll had been truly stated, and by way of penalty a sum equal to such difference.

Penalty.

Board may relieve from penalty.

(2) The Board if satisfied that the inaccuracy of the statement was not intentional and that the employer honestly desired to furnish an accurate statement, may relieve him from the payment of the penalty provided for by subsection 1 or any part of it.

Examination of accounts and books of employer.

78.—(1) The Board and any member of it, and any officer or person authorized by it for that purpose shall have the right to examine the books and accounts of the employer and to make such other enquiry as the Board may deem necessary for the purpose of ascertaining whether any statement furnished to the Board under the provisions of section 76 is an accurate statement of the matters which are required to be stated therein or of ascertaining the amount of the pay-roll of any employer, and for the purpose of any such examination and enquiry the Board and the person so appointed shall have all the powers which may be conferred on a commissioner appointed under *The Public Inquiries Act*.

8 Ed. VII., C. 8.

Penalty for obstruction.

(2) An employer and every other person who obstructs or hinders the making of the examination and inquiry mentioned in subsection 1, or refuses to permit it to be made shall incur a penalty not exceeding $500.

Board to have right to inspect premises of employer.

79.—(1) The Board and any member of it and any officer or person authorized by it for that purpose shall have the right at all reasonable hours to enter into the establishment of any employer who is liable to contribute to the accident fund and the premises connected with it and every part of them for the purpose of ascertaining whether the ways, works, machinery or appliances therein are safe, adequate and sufficient and whether all proper precautions are taken for the prevention of accidents to the workmen employed in or about the establishment or premises and whether the safety appliances or safeguards prescribed by law are used and employed therein, or for any other purpose which the Board may deem necessary for the purpose of determining the proportion in which such employer should contribute to the accident fund.

Penalty for obstruction.

(2) An employer and every other person who obstructs or hinders the making of any inspection made under the authority of subsection 1, or refuses to permit it to be made, shall incur a penalty not exceeding $500.

Information obtained not to be divulged.

80.—(1) No officer of the Board and no person authorized to make an inquiry under this Part shall divulge or allow to be divulged except in the performance of his duties or under the authority of the Board any information obtained by him or which has come to his knowledge in making or in connection with an inspection or inquiry under this Part.

Penalty.

(2) Every person who contravenes any of the provisions of subsection 1 shall incur a penalty not exceeding $50.

Recovery and application of penalties.

81. The penalties imposed by or under the authority of this Part shall be recoverable under *The Ontario Summary Convictions Act* and when collected shall be paid over to the Board and shall form part of the accident fund.

ASSESSMENTS.

Provisional assessment.

82. The Board shall on or before the day of , 19 , make a provisional assessment on the employers in each class of such sum as in the opinion of the Board will be sufficient to meet the claims for compensation which will be payable by that class during the then calendar year, and to provide a reserve fund of such amount as the Board may deem necessary to pay the compensation payable in future years in respect of claims in that class for accidents happening in that year and also to meet the expenses of the Board in the administration of this Part for the year.

How assessment may be based.

83. The sums to be so assessed may be either a percentage of the pay-rolls of the employers or a specific sum as the Board may determine.

Subsequent assessments.

84. The Board shall in every year thereafter assess and levy upon the employers in each of the classes a sum sufficient to pay the compensation which was paid in the next preceding calendar year in respect of injuries to workmen in industries within the class and to provide a reserve fund of such amount as the Board may deem necessary to pay the compensation payable in subsequent years in respect of claims in that class which arose during such next preceding year and also to pay the expenses of the Board in the administration of this Part for that year and such assessments may be based upon the pay rolls of the employers.

Proportion of assessment payable by employer to be fixed.

85.—(1) The Board shall determine and fix the proportion or part of the sum for which a class is so assessed under the provisions of either of the next preceding two sections which is to be paid by the employers within the class or within any sub-class and every employer shall pay to the Board the sum payable by him within 15 days after notice of the assessment and of the amount so payable has been given to him.

Notice of assessment.

How notice may be served.

(2) The notice may be sent by registered post to the employer and shall be deemed to have been given to him on the day on which the notice was posted.

Insufficient assessment to be made up by supplementary assessments.

86. If the amount intended to be provided for by the assessment in any year is by reason of the failure of an em-

ployer to pay his proportion of it or from any other cause insufficient for the purpose for which it was made, the Board may make supplementary assessments to make up the deficiency and section 85 shall apply to such assessments.

All classes may be assessed for deficiency in any of them.

87. Where the payments made by the employers in any class are insufficient to meet the amount of any assessment upon the employers embraced in it the deficiency shall be made up by supplementary assessments upon the employers in all the classes and the provisions of section 85 shall apply to such assessments.

Where deficiency made good by employer, mode of application of payment.

88.—(1) If and so far as any deficiency mentioned in the next preceding two sections is afterwards made good wholly or partly by the defaulting employer the amount which shall have been made good shall be apportioned between the other employers in the proportions in which the deficiency was made up by them by the payment of supplementary assessments upon them and shall be credited to them in making the next assessment.

Employer not assessed liable to pay amount for which he should have been assessed.

(2) If for any reason an employer liable to assessment is not assessed in any year he shall nevertheless be liable to pay to the Board the amount for which he should have been assessed, and payment of that amount may be enforced in the same manner as the payment of an assessment may be enforced.

Amount collected to be taken into account in making subsequent assessment.

(3) Any sum collected from an employer under subsection 2 shall be taken into account by the Board in making an assessment in a subsequent year on the employers in the class or sub-class to which such employer belonged.

Employer liable to pay unpaid sums.

89. Notwithstanding that the deficiency arising from a default in the payment of the whole or part of any assessment has been made up by a special assessment a defaulting employer shall continue liable to pay to the Board the amount of every assessment made upon him or so much of it as remains unpaid.

Lieutenant-Governor-in-Council may require supplementary assessments to be made.

90. Whenever the Lieutenant-Governor in Council is of opinion that the condition of the accident fund is such that with the reserves it is not sufficient to meet all the payments to be made in respect of compensation as they become payable and so as not unduly or unfairly to burden the employers in any class in future years with payments which are to be made in those years in respect of accidents which have happened in previous years, he may require the Board to make a supplementary assessment of such sum as in his opinion

is necessary to be added to the fund, and when such a requirement is made the Board shall forthwith make such supplementary assessment and it shall be made in like manner as is hereinbefore provided as to other special assessments and all the provisions of this Part as to special assessments shall apply to it.

Formation of reserves.

91. In order to maintain the accident fund as provided by section 70 the Board may from time to time and as often as may be deemed necessary include in any sum to be assessed upon the employers and may collect from them such sums as may be deemed necessary for that purpose and the sums so collected shall form a reserve fund and shall be invested in securities in which a trustee may by law invest trust moneys.

Penalty for non-payment of assessment.

92. If an assessment or a special assessment is not paid at the time when it becomes payable, the defaulting employer shall be liable to pay and shall pay as a penalty for his default such a percentage upon the amount unpaid as may be prescribed by the Regulations or may be determined by the Board.

Collection of unpaid assessments

93. Where default is made in the payment of any assessment, or special assessment, or any part of it the Board may issue its certificate stating that the assessment was made, the amount remaining unpaid on account of it and the person by whom it was payable and such certificate or a copy of it certified by the Secretary to be a true copy may be filed with the clerk of any county or district court and when so filed shall become an order of that court and may be enforced as a judgment of the court against such person for the amount mentioned in the certificate.

Board may collect assessment through municipal collectors.

94.—(1) If an assessment or a special assessment or any part of it remains unpaid for 30 days after it has become payable, the Board, in lieu of or in addition to proceeding as provided by the next preceding section, may issue its certificate stating the name and residence of the defaulting employer, the amount unpaid on the assessment, the establishment in respect of which it is payable, and upon the delivery of the certificate to the clerk of the municipality in which the establishment is situate he shall cause the amount so remaining unpaid as stated in the certificate to be entered upon the collector's roll as if it were taxes due by the defaulting employer in respect of such establishment, and it shall be collected in like manner as taxes are levied and collected and the amount when collected shall be paid over by the collector to the Board.

Collector entitled to percentage.

(2) The collector shall be entitled to add five per cent. thereof to the amount to be collected and to retain such percentage for his services in making the collection.

RETURNS OF ACCIDENTS.

Employers to give notice of accidents.

95.—(1) Every employer shall within three days after the happening of an accident to a workman in his employment by which the workman is disabled from earning full wages notify the Board by registered post of the:—

(*a*) happening of the accident and nature of it;

(*b*) time of its occurrence;

(*c*) Name and address of the workman;

(*d*) place where the accident happened;

(*e*) name and address of the physician or surgeon, if any, by whom the workman was or is attended for the injury.

Penalty.

(2) For every contravention of subsection 1 the employer shall incur a penalty not exceeding $50.

INDUSTRIAL DISEASES.

Certain industrial diseases to be deemed accidents.

96.—(1) Where a workman suffers from an industrial disease and is thereby disabled from earning full wages at the work at which he was employed or his death is caused by an industrial disease and the disease is due to the nature of any employment in which he was engaged at any time within twelve months previous to the date of his disablement, whether under one or more employments the workman or his dependants shall be entitled to compensation as if the disease were a personal injury by accident and the disablement were the happening of the accident, subject to the modifications hereinafter mentioned, unless at the time of entering into the employment he had wilfully and falsely represented himself in writing as not having previously suffered from the disease.

By whom compensation payable.

(2) Where the compensation is payable by an employer individually it shall be payable by the employer who last employed the workman during such twelve months in the employment to the nature of which the disease was due.

Names of former employers to be furnished by claimants.

(3) The workman or his dependants if so required shall furnish the employer mentioned in the next preceding subsection with such information as to the names and addresses of all the other employers by whom he was employed in the employment to the nature of which the disease was due during such twelve months as such workman or his dependants may possess, and if such information is not furnished or is not sufficient to enable that employer to take the proceedings mentioned in subsection 4 that employer upon proving that the disease was not contracted while the workman was in his employment shall not be liable to pay compensation.

Last employer may bring in former employers.

(4) If that employer alleges that the disease was in fact contracted while the workman was in the employment of some other employer he may bring such employer before the Board and if the allegation is proved that other employer shall be the employer by whom the compensation shall be paid.

Where disease result of gradual process, former employers to contribute.

(5) If the disease is of such a nature as to be contracted by a gradual process any other employers who during such twelve months employed the workman in the employment to the nature of which the disease was due shall be liable to make to the employer by whom the compensation is payable such contributions as the Board may determine to be just.

How compensation to be fixed.

(6) The amount of the compensation shall be fixed with reference to the earnings of the workman under the employer by whom the compensation is payable and the notice provided for by section 20 shall be given to the employer who last employed the workman during such twelve months in the employment to the nature of which the disease was due and the notice may be given notwithstanding that the workman has voluntarily left the employment.

Presumptions as to disease being due to nature of employment.

(7) If the workman at or immediately before the date of the disablement was employed in any process mentioned in the second column of Schedule 3 and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process the disease shall be deemed to have been due to the nature of that employment unless the contrary is proved.

Right to compensation where disease is result of an injury not to be affected.

(8) Nothing in this section shall affect the right of a workman to compensation in respect of a disease to which this section does not apply if the disease is the result of an injury in respect of which he is entitled to compensation under this Part.

FORMATION OF ASSOCIATIONS.

Associations of employers may be formed.

97.—(1) The employers in any of the classes for the time being included in Schedule 1 may form themselves into an association for accident prevention and may make rules for that purpose.

Rules of Associations if approved by Board and Lieutenant Governor in Council to be binding on the members of the class.

(2) If the Board is of opinion that an association so formed sufficiently represents the employers in the industries included in the class, the Board may approve such rules, and when approved by the Board and by the Lieutenant-Governor in Council they shall be binding on all the employers in industries included in the class.

Where Inspector or Expert appointed by an Association his salary may be paid out of the accident fund

(3) Where an association under the authority of its rules appoints an inspector or an expert for the purpose of accident prevention, the Board may pay the whole or any part of the salary or remuneration of such inspector or expert out of the accident fund or out of that part of it which is at the credit of any one or more of the classes as the Board may deem just.

Application of Part 1.

98. This Part shall apply only to the industries mentioned in Schedules 1 and 2 and to such industries as may be added to Schedule 1 under the authority of this Part.

PART II.

Application of Sections 100 to 102.

99. Sections 100 to 102 shall until the day of 191 , apply to every industry and to every workman employed in it, and after that day shall apply only to the industries to which Part I. does not apply and to the workmen employed in such industries.

Liability of Employer for defective ways, works, etc., and for negligence of his servants.

100. Where personal injury is caused to a workman by reason of any defect in the condition or arrangement of the ways, works, machinery, plant, buildings or premises connected with, intended for or used in the business of his employer or by reason of the negligence of his employer or of any person in the service of his employer, the workman or if the injury results in death the legal personal representatives of the workman and any person entitled in case of death shall have an action against the employer, and if the action is brought by the workman he shall be entitled to recover from the employer the damages sustained by the workman by or in consequence of the injury, and if the action is brought by the legal personal representatives of the

workman or by or on behalf of persons entitled to damages under *The Fatal Accidents Act* they shall be entitled to recover such damages as they are entitled to under that Act. 1 Geo. V. c. 33.

101. A workman shall hereafter be deemed not to have undertaken the risks incidental to his employment or those due to the negligence of his fellow workmen and contributory negligence on the part of a workman shall not hereafter be a bar to recovery by him or by any person entitled to damages under *The Fatal Accidents Act* in an action for the recovery of damages for an injury sustained by or causing the death of the workman while in the service of his employer for which the employer would otherwise have been liable. Certain common law rules abrogated. 1 Geo. V. c. 33.

102. Contributory negligence on the part of the workman shall nevertheless be taken into account in assessing the damages in any such action. Contributory negligence to be considered in assessing damages

PART III.

REPEAL.

The Workmen's Compensation for Injuries Act, R.S.O. 1897, c. 160, is hereby repealed. Repeal.

SCHEDULE 1.

INDUSTRIES THE EMPLOYERS IN WHICH ARE LIABLE TO CONTRIBUTE TO THE ACCIDENT FUND.

Class 1.—Lumbering; logging, river-driving, rafting, booming; sawmills, shingle-mills, lath-mills; manufacture of veneer and of excelsior; manufacture of staves, spokes, or headings.

Class 2.—Pulp and paper mills.

Class 3.—Manufacture of furniture, interior woodwork, organs, pianos, piano actions, canoes, small boats, coffins, wicker and rattan ware; upholstering; manufacture of mattresses, or bed-springs.

Class 4.—Planing mills, sash and door factories, manufacture of wooden and corrugated paper boxes, cheese boxes, mouldings, window and door screens, window shades, carpet sweepers, wooden toys, articles and wares or baskets.

Class 5.—Mining; reduction of ores and smelting; preparation of metals or minerals.

Class 6.—Quarries; sand, shale, clay or gravel pits, lime kilns; manufacture of brick, tile, terra-cotta, fire-proofing, or paving blocks, manufacture of cement, asphalt or paving material.

Class 7.—Manufacture of glass, glass products, glassware, porcelain or pottery.

Class 8.—Iron, steel or metal foundries; rolling mills; manufacture of castings, forgings, heavy engines, locomotives, machinery, safes, anchors, cables, rails, shafting, wires, tubing, pipes, sheet metal, boilers, furnaces, stoves, structural steel, iron or metal.

Class 9.—Car shops.

Class 10.—Manufacture of small castings or forgings, metal wares, instruments, utensils and articles, hardware, nails, wire goods, screens, bolts, metal beds, sanitary, water, gas or electric fixtures, light machines, typewriters, cash registers, adding machines, carriage mountings, bicycles, metal toys, tools, cutlery, instruments, sheet metal products, buttons of metal, ivory, pearl or horn.

Class 11.—Manufacture of agricultural implements, threshing machines, traction engines, waggons, carriages, sleighs, vehicles, automobiles, motor trucks, toy waggons, sleighs or baby carriages.

Class 12.—Manufacture of gold or silverware, platedware, watches, watch-cases, clocks, jewellery, or musical instruments.

Class 13.—Manufacture of chemicals or explosives, corrosive acids or salts, ammonia, calcium carbide, gasoline, petroleum, petroleum products, celluloid, gas, charcoal, artificial ice, gunpowder or ammunition.

Class 14.—Manufacture of paint, color, varnish, oil, japans, turpentine, printing ink, printers' rollers, tar, tarred, pitched or asphalted paper.

Class 15.—Distilleries, breweries; manufacture of spirituous or malt liquors, alcohol, wine, vinegar, mineral water or soda waters.

Class 16.—Manufacture of non-hazardous chemicals drugs, medicines, dyes, extracts, pharmaceutical or toilet preparations, soaps, candles, perfumes, non-corrosive acids or chemical preparations; shoe-blacking or polish.

Class 17.—Milling; manufacture of cereals or cattle foods, warehousing or handling of grain or operation of grain elevators.

Class 18.—Packing houses, abattoirs, manufacture or preparation of meats or meat products or glue.

Class 19.—Tanneries.

Class 20.—Manufacture of leather goods and products, belting, saddlery, harness, trunks, valises, boots, shoes, gloves, umbrellas, rubber goods, rubber shoes, tubing, tires or hose.

Class 21.—Manufacture of dairy products, butter, cheese, condensed milk or cream.

Class 22.—Canning or preparation of fruit, vegetables, fish or food stuffs; pickle factories and sugar refineries.

Class 23.—Bakeries; manufacture of biscuits or confectionery, spices or condiments.

Class 24.—Manufacture of tobacco, cigars, cigarettes or tobacco products.

Class 25.—Manufacture of cordage, ropes, fibre, brooms or brushes; work in manilla or hemp.

Class 26.—Flax mills; manufacture of textiles or fabrics, spinning, weaving and knitting manufactories; manufacture of yarn, thread, hosiery, cloth, blankets, carpets, canvas, bags, shoddy or felt.

Class 27.—Manufacture of men's or women's clothing, white wear, shirts, collars, corsets, hats, caps, furs or robes.

Class 28.—Power laundries; dyeing, cleaning or bleaching.

Class 29.—Printing, photo-engraving, engraving, lithographing, embossing; manufacture of stationery, paper, cardboard boxes, bags or wall-paper; and book-binding.

Class 30.—Heavy teaming or cartage; safe-moving or moving of boilers, heavy machinery, building stone and the like; warehousing, storage.

Class 31.—Stone-cutting or dressing; marble works; manufacture of artificial stone.

Class 32.—Steel building and bridge construction; installation of elevators, fire-escapes, boilers, engines or heavy machinery.

Class 33.—Brick-laying, mason work, stone-setting, concrete work, plastering; and manufacture of concrete blocks.

Class 34.—Structural carpentry.

Class 35.—Painting, decorating or renovating; sheet metal work and roofing.

Class 36.—Plumbing, sanitary or heating engineering, operation of passenger or freight elevators, theatre stage or moving pictures.

Class 37.—Sewer construction, deep excavation, tunnelling, shaft-sinking and well-digging.

Class 38.—Construction, installation or operation of electric power lines or appliances, and power transmission lines.

Class 39.—Construction of telegraph or telephone lines.

Class 40.—Road-making or repair of roads with machinery.

Class 41.—Construction of railways.

Class 42.—Shipbuilding.

Class 43.—Navigation.

Class 44.—Dredging, subaqueous construction or pile driving.

SCHEDULE 2.

INDUSTRIES THE EMPLOYERS IN WHICH ARE INDIVIDUALLY LIABLE TO PAY THE COMPENSATION.

1. The trade or business, as defined by subsection 3 of section 2, of a municipal corporation, a public utilities commission, any other commission having the management and conduct of any work or service owned by or operated for a municipal corporation, a board of trustees of a police village and a school board.

2. The construction and operation of railways operated by steam, electric or other motive power, street railways and incline railways, but not their construction when constructed by any person other than the company which owns or operates the railway.

3. The construction and operation of car shops, machine shops, steam and power plants and other works for the purposes of any such railway or used or to be used in connection with it when constructed or operated by the company which owns or operates the railway.

4. The construction and operation of telephone lines and works for the purposes of the business of a telephone company or used or to be used in connection with its business when constructed or operated by the company.

5. The construction and operation of telegraph lines and works for the purposes of the business of a telegraph company or used or to be used in connection with its business when constructed or operated by the company.

6. The construction and operation of steam vessels and works for the purposes of the business of a navigation company or used or to be used in connection with its business when constructed or operated by the company.

SCHEDULE 3.

Description of Disease.	Description of Process.
Anthrax.	Handling of wool, hair, bristles, hides, and skins.
Lead poisoning or its sequelæ.	Any process involving the use of lead or its preparations or compounds.
Mercury poisoning or its sequelæ.	Any process involving the use of mercury or its preparations or compounds.
Phosphorus poisoning or its sequelæ.	Any process involving the use of phosphorous or its preparations or compounds.
Arsenic poisoning or its sequelæ.	Any process involving the use of arsenic or its preparations or compounds.
Ankylostomiasis.	Mining.

AUDITOR'S REPORT

1912-13

Pursuant to the provisions of sub-section 2 of section 13 of the Audit Act as amended by section 6, chapter 10, 9 Edward VII

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:

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1914

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WILLIAM BRIGGS,
29-37 Richmond Street West,
TORONTO.

To His Honour, Sir John Morison Gibson, K.C.M.G., *a Colonel in the Militia of Canada, etc., Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

The undersigned has the honour to present to Your Honour statements of the Auditor pursuant to the provisions of sub-section 2 of section 13 of the Audit Act as amended by section 6, chapter 10, 9 Edward VII.

Respectfully submitted,

I. B. Lucas,

Provincial Treasurer.

Treasury Department, Ontario,

Toronto, February 17th, 1914.

AUDIT OFFICE,

Toronto, February 17th, 1914.

SIR,—I have the honour to submit for the information of the Legislative Assembly pursuant to the provisions of sub-section 2 of 13 of the Audit Act as amended by section 6, Chap. 10, 9 Edward VII., as directed by a minute of the Treasury Board dated the 29th day of October, 1909, as follows:

(A) Statement of Special Warrants issued.

(B) Statement of expenditures in excess of appropriations.

J. CLANCY,

Auditor.

HON. I. B. LUCAS, K.C., M.P.P.,

Provincial Treasurer

A

Statement of Special Warrants issued during the Fiscal Year ended October 31st, 1913

1912		Warrant	Expended
		$ c.	$ c.
Nov. 20th.....	Services and expenses of Judges to Agricultural Societies in 1912	2,000 00	1,842 01
" 26th.....	London Asylum—Electric light wiring, power and fire system	5,000 00	3,760 88
" 26th.....	Blind Institution, Brantford—Kirker-bender fire escape	2,825 00	2,660 00
Dec. 27th.....	Colonization Roads—McIntyre and Gorham Rd.	307 23	307 23
1913.			
Jan. 31st.....	Payment of outstanding accounts in connection with Gaol at Porcupine	500 00	395 93
May 21st.....	Payment to Municipalities entitled to share in surplus Registry fees	31,333 71	31,333 71
June 12th.....	Services of Clerk of Works, Ontario Government Building, London, Eng.	500 00	500 00
" 16th.....	Excursion Canadian Press Association to Cobalt, Porcupine, etc.	500 00	500 00
" 25th.....	Payment of premiums for insurance on Provincial buildings and boats	1,000 00	993 73
Aug. 15th and Oct. 8th.....	Commission *re* Scheme of Improved Highways.	4,500 00	3,386 26
Aug. 25th.....	Battle of Chrysler's Farm Centenary	1,000 00	1,000 00
Sept. 12th.....	Entertainment of excursionists from Temiskaming District to the Demonstration Farm at Monteith	270 00	270 00
" 25th.....	Tecumseth Celebration, Moraviantown	300 00	300 00
Oct. 1st.....	Accounts of E. Longstaffe *re* catering to Statute Revision Commission	682 85	678 35
" 8th.....	Services of Valuator on Normal School and Bloor Street properties	600 00	600 00
" 16th.....	Expenses of Geological staff accompanying excursion held by Geological Congress	1,975 08	1,975 08
" 21st.....	Inter-Provincial Congress at Ottawa	600 00	302 85
" 24th.....	Exhibit of Provincial Secretary's Department at Canadian National Exhibition	750 00	670 33
" 31st.....	Expenses of delegate with American Commission *re* Agricultural conditions in Europe...	1,241 00	1,240 18
		56,084 87	52,716 54

B

Statement of Expenditures in Excess of Appropriations for the Fiscal Year ended October 31st, 1913

1913	Service	Warrant	Expended
		$ c.	$ c.
May 9th	Legislation—Sessional writers, messengers, etc.	2,300 00	2,300 00
" 15th	Normal School, North Bay—Students' board and travelling expenses	3,000 00	2,364 20
" 15th	Technical Education, Grants, Scholarships, etc.	500 00	9 70
July 5th	Enforcement of Stallion Enrolment Act	1,000 00	645 60
" 10th	Audit Office—Contingencies	1,200 00	1,200 00
" 15th	Osgoode Hall—Registrar's Office, Typewriters and Desks	104 74	104 74
" 16th	Registry Office, Bracebridge	420 00	395 00
" 23rd	Live Stock Branch—Contingencies	3,000 00	2,192 72
" 24th	Parliament Buildings—Telephone service	3,000 00	3,000 00
" 29th	Provincial Prison, Guelph	80,000 00	80,000 00
" 29th	Special Investigations, Inspections of Public Institutions	1,800 00	1,545 13
Aug. 5th	Travelling expenses Bailiff and prisoners	2,500 00	2,500 00
" 12th	Attorney-General's Dept.—Contingencies	300 00	300 00
" 13th	Expenses of Elections	2,000 00	2,000 00
" 14th	Provincial Board of Health:—		
	Printing pamphlets on health matters	615 00	
	Temporary services	800 00	1,470 54
	Contingencies	85 00	
" 19th	Education Department—Contingencies	1,000 00	937 44
" 19th	English-French Training Schools	7,000 00	4,683 40
" 19th	Succession Duty—Refunds	10,000 00	10,000 00
" 19th	London Normal School—Reference Books	500 00	500 00
" 19th	do Furniture and incidentals	400 00	282 16
" 19th	North Bay Normal School—Reference books	200 00	200 00
" 19th	High Schools and Coll. Institutes—Travelling expenses	700 00	181 12
" 19th	Flag Shields for Rural Schools	230 00	227 99
" 19th	Horticultural Experiment Station	2,500 00	2,144 01
" 19th	Experiments with special crops and spraying expenses *re* Fruit Pests Act	2,500 00	2,500 00
" 19th	Legislation—Contingencies	1,000 00	1,000 00
" 19th	Succession Duty Office—Contingencies	500 00	500 00
" 19th	Provincial Secretary's Department—Contingencies	2,500 00	2,500 00
" 20th	District of Sudbury—General Administration of Justice	6,000 00	3,837 83
" 20th	Osgoode Hall—General repairs	1,450 00	1,423 51
" 20th	Immigration Office, Front Street	550 00	549 85
" 20th	Litigation of Constitutional Questions	3,500 00	1,455 71
" 21st	Kaministiquia Bridge, Paipoonge Twp.	483 58	453 58
Sept. 5th	Good Roads—Model exhibits	300 00	203 08
" 9th	Railway fares and clothing of discharged prisoners, Central Prison	2,000 00	1,828 93
" 11th	District Thunder Bay—General Administration of Justice	1,000 00	1,000 00
" 11th	District of Rainy River—Gaol Maintenance	100 00	62 64
" 11th	District of Kenora—Gaol Maintenance	500 00	121 43
" 15th	Legislation—Contingencies	3,000 00	1,729 31
" 26th	Central Prison Industries—Manufacturing and Industrial Operations	15,000 00	15,000 00
" 26th	Central Prison—Contingencies	1,000 00	685 58
" 26th	do —Clothing	3,000 00	2,613 95
Oct. 1st	Expenses of Elections	1,000 00	1,000 00
" 2nd	Parliament Buildings—Repairs and cleaning	1,500 00	1,500 00
" 2nd	do —Grounds and walks	300 00	278 83
" 2nd	Osgoode Hall—Cleaning of building	200 00	200 00

Statement of Expenditures in Excess of Appropriation for the Fiscal Year ended October 31st, 1913—Continued

1913	Service	Warrant	Expended
		$ c.	$ c.
Oct. 7th.....	Bureau of Archives—Contingencies	200 00	186 77
" 7th.....	Osgoode Hall—Registrar's Office, contingencies	500 00	270 41
" 7th.....	Stationary Engineers—Contingencies	800 00	773 29
" 7th.....	Public Works Department—Contingencies.....	1,400 00	1,400 00
" 8th.....	Central Prison Industries—Manufacturing and Industrial Operations	8,000 00	7,293 60
" 8th.....	New Provincial Prison, Guelph	9,000 00	8,975 97
" 9th.....	Inspection Public Institutions Office—Contingencies	1,500 00	1,479 28
" 10th.....	Expenses of Elections	100 00	30 91
" 10th.....	Parliament Buildings—Repairs and cleaning ..	3,000 00	3,000 00
" 10th.....	Osgoode Hall—Cleaning of building	500 00	448 17
" 15th.....	Experiments with special crops and spraying expenses *re* Fruit Pests Act	700 00	678 11
" 15th.....	Osgoode Hall—Fence on Osgoode Street.....	197 48	188 23
" 15th.....	District of Thunder Bay—General Administration of Justice	2,000 00	1,849 33
" 16th.....	Administration of Justice—Special services ...	2,251 50	2,101 50
" 18th.....	Mountain Lake Bridge, Minden	350 00	345 43
" 18th.....	Drainage Rainy River Roads	250 00	250 00
" 18th.....	Papineau Bridges, Boom Creek	50 00	50 00
" 18th.....	Veuve River Bridge, Markstay	36 00	35 18
" 18th.....	Golden Lake Bridge, Bonnechere Creek	10 00	10 00
" 18th.....	Surveys and Inspections	50 00	31 60
" 18th.....	Two Tree Bridge, St. Joseph's	3 00	2 95
" 18th.....	South Channel Bridge and Dam, Bala	200 00	182 95
" 18th.....	Warren Bridge, Veuve River	165 00	1 14
" 21st.....	Treasury Department—Contingencies	1,000 00	903 35
" 21st.....	Legislation—Clerks of Committees and Secretaries of Speaker and Leader of Opposition..	500 00	455 46
" 21st.....	Succession Duty Office—Contingencies	500 00	423 84
" 21st.....	Legislation—Sessional Writers, Messengers, etc.	200 00	145 50
" 24th.....	Public Works Department—Contingencies	500 00	29 58
" 31st.....	Blind Institute, Brantford—Flour, butter, meat, fish, etc.	225 00	215 79
" 31st.....	Land Titles Office, Sault Ste. Marie—Rent of office	87 50	87 50
" 31st.....	Local Masters of Titles—Register and Index Books	75 00	111 49
" 31st.....	Osgoode Hall—Fuel, light and water	100 00	47 04
" 31st.....	District of Algoma—General Administration of Justice	100 00	132 75
" 31st.....	Provincial Secretary's Department—Contingencies	800 00	791 58
" 31st.....	Attorney-General's Department—Contingencies.	100 00	81 08
" 31st.....	Crown Lands—Fire Ranging	15,000 00	5,500 81
" 31st.....	do —Ottawa Agency	150 00	83 51
" 31st.....	Parliament Buildings—Telephone Service	1,000 00	894 24
" 31st.....	Hospital for Insane, Toronto, Whitby Branch..	11,000 00	9,568 46
" 31st.....	Colonization and Immigration—Printing pamphlets, advertising, etc.	2,500 00	2,599 92
" 31st.....	Colonization and Immigration—Transportation expenses distributing settlers, etc.	200 00	150 39
" 31st.....	Manitoulin District—Drainage Roads	60 00	50 54
" 31st.....	Drainage Rainy River Roads	825 00	795 54
" 31st.....	Golden Lake Bridge, Bonnechere River	20 00	17 56
" 31st.....	Boyne Bridges, Foley	365 00	360 98
" 31st.....	Papineau Bridges, Boom Creek	30 00	24 28
" 31st.....	Corbett Creek Bridge, Oliver	650 00	598 16
" 31st.....	McKelvey Creek Bridge, Crozier	360 00	337 67
" 31st.....	Departmental Examinations	1,200 00	659 12
" 31st.....	Special Lectures in Rural and Urban Schools..	75 00	69 83

Statement of Expenditures in Excess of Appropriation for the Fiscal Year ended October 31st, 1913—Continued

1913	Service	Warrant	Expended
		$ c.	$ c.
Oct. 31st.....	N. and M. Schools, Toronto—Furniture and Furnishings	600 00	450 62
" 31st.....	N. and M. Schools, Toronto—Expenses of Grounds	350 00	337 89
" 31st.....	N. and M. Schools, Toronto—Fuel and Light...	600 00	577 24
" 31st.....	Normal School, Ottawa—Contingencies	200 00	32 40
" 31st.....	do Snow cleaning and cartage..	350 00	260 75
" 31st.....	do London—Contingencies	300 00	278 37
" 31st.....	do Peterboro—Contingencies	150 00	112 53
" 31st.....	do Stratford—Contingencies	150 00	8 09
" 31st.....	do North Bay—Contingencies ...	200 00	77 03
" 31st.....	Night High Schools	800 00	733 65
" 31st.....	Military Instruction, H. S. Cadet Corps	900 00	453 72
" 31st.....	Library Institutes	125 00	104 73
" 31st.....	Institution for Deaf and Dumb—Miscellaneous.	15 00	13 76
" 31st.....	Taxing Office—Contingencies	15 00	2 57
" 31st.....	Travelling Expenses of Bailiff and prisoners..	400 00	337 65
" 31st.....	Hospital for Feeble-Minded, Orillia—Additional farm lands and drainage	500 00	154 50
" 31st.....	Succession Duty—Refunds	500 00	286 59
" 31st.....	Parliament Buildings—Supplies, tools, etc.....	400 00	153 94
	do Repairs and cleaning	1,500 00	821 70
	do Painting outside and inside work	200 00	175 71
" 31st.....	Osgoode Hall—Electric wiring and fixtures....	200 00	83 07
	do Furniture and incidentals	1,000 00	648 79
" 31st.....	Temiskaming District: Furniture and furnishings	500 00	388 91
" 31st.....	Nipissing District:		
" 31st.....	Repairs to Court House	650 00	628 90
" 31st.....	Sudbury District:		
	Repairs and alterations	400 00	128 78
	Furniture and furnishings	450 00	298 89
" 31st.....	Institution for Deaf and Dumb—Repairs and incidentals	180 00	124 33
" 31st.....	Colonization and Immigration—Work in Great Britain	10,000 00	9,752 20
" 31st.....	Agriculture—Farmers' Institutes	2,150 00	2,132 25
	Audit Office—Contingencies	140 00	127 19
		265,348 80	234,035 52

ALGONQUIN PARK

Estimates, Reports, Etc.

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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1914

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WILLIAM BRIGGS,
29-37 Richmond Street West,
TORONTO.

MEMORANDUM.

The policy of the Government of Ontario for some years has been to set apart parks and what are called "Forest Reserves." The first for the purpose of preserving the forests therein from destruction and preserving the timber for future use as well as providing a harbour for wild life, and a recreation ground for the people of the Province who desired to take advantage of the opportunities afforded them.

In forest reserves the object was, largely—if not entirely—to protect the pine timber from destruction by fire or settlement, and to dispose of it only as circumstances rendered such disposition necessary or expedient.

The great park called the Algonquin Park was set apart in 1893. At the time it was set apart it was covered by various timber licenses, some of them covering all varieties of timber, and those of the most recent sale of 1892, in view of the intention to create the Park, being restricted to pine timber only. The legislation creating the Park removed from the operation of the timber licenses all varieties of timber except pine, but on subsequent protests being made to the Government by the timber licensees, at being deprived of "their property," the timbers other than pine, except maple, basswood, beech and balsam were restored to the licenses for a period of thirty years, which period will expire on the 30th of April, 1930, when all the timber other than the pine would come back into the Crown. The pine timber of course remained under license subject to the ordinary conditions.

From time to time additions of territory have been made to the Park where the adjoining lands were unsuitable for settlement, and careful supervision has been given to the protection of the timber, wild life, etc., by a staff of rangers on duty during the whole year and aided during the summer months by an additional staff of fire rangers.

Since the Park was established bird and animal life of all kinds has enormously increased until the Park has become a veritable reservoir of wild life, which flows from thence into the surrounding country. It is a great summer resort, and is now becoming a winter sanitarium, and is much appreciated by all people who go there in search of outing, recreation and improvement in health.

The Government, as you are aware, some few years ago entered upon a policy of conserving the timber resources of the Province, and naturally their eyes were turned in the direction of Algonquin Park to see what could be done to bring back into the Crown free from any private control by timber license or otherwise certain areas which had been cut over or partly cut over.

In pursuance of this idea the Crown purchased from the Munn Lumber Company its rights to licensed territory covering 350 square miles almost entirely within the Park, for which the sum of $290,000 was paid. At the time the Park was set apart originally nothing had much value except the pine, as the region was remote from railway connection, hardwoods were not floatable, and hemlock and spruce were not in demand, so that pine was really the only timber of value. Since then railways have pierced the Park and all timber has taken on a considerable value, and there is every prospect that all varieties of timber in the Park will

greatly appreciate in value in the future. There are large quantities of birch, hemlock, spruce and balsam, which are valuable woods not only for lumbering, but for chemical purposes, and there is a chemical plant in process of erection near the Park which will no doubt reach out for supplies of timber wherever they can find it available or purchasable, and if an operation of this kind gets a footing in the Park, the ground covered by its cutting will be swept clean.

It was considered a good move to purchase the Munn Lumber Company's limits, because devastation was threatened by their cutting of all kinds of timber down to a very small diameter, to have permitted which would have destroyed the Park, and it might as well have been abandoned.

The undersigned is of opinion that every effort should be made to preserve the timber in the Park by quieting all lumber titles where they can be purchased at a reasonable price, for in another generation not only will the timber so preserved have increased enormously in quantity, but also in value, and with proper protection and regulations as to cutting, a large revenue and a considerable supply of timber for Provincial needs will be available. It would be an act of vandalism to allow this magnificent Park to become a total waste, as it infallibly would if all the timbers were permitted to be cut for even the next fifteen years. The Park should be extended. There are several localities outside it that ought to be brought in, notably on the east, because these territories are unsuitable for settlement. Settlement should not be allowed in them, and the territories should be brought into the Park free of licenses if they can be obtained on equitable value.

There are some licensees who have expressed their willingness to sell at what they call reasonable prices—the Hawkesbury Lumber Company, Messrs. Gillies Brothers, and the Pembroke Lumber Company.

The Honourable Mr. Cochrane had under consideration the acquirement of the Pembroke Lumber Company's limits and adding them to the Park, and a reconnaissance was made by Mr. Henderson and two rangers, Messrs. Allen and Wilson, to get some idea as to how the territory was timbered, and whether it would be suitable for reforestation.

The report of Messrs. Allen and Wilson is with the papers. Nothing further was done in the matter owing, I think, to the large value put on their limits at that time by the company and to Mr. Cochrane's retirement from the office of Minister of Lands, Forests and Mines. So the matter was left in abeyance until January 3rd, 1913, when, under your directions, Mr. Henderson, Crown Timber Agent at Sudbury, was instructed to make a careful examination, and certain rangers were given to him for that purpose.

Annexed hereto are the instructions to Mr. Henderson and the report of the estimators on the quantities of timber standing on these limits, to which is also attached an approximate value of the timber and a report of Professor Zavitz, Forester for the Province, referring to the locality from a reforestry point of view, also an approximate estimate of the area of the territory proposed to be purchased.

In giving the instructions for the examination the undersigned particularized the necessity for ascertaining what the young growth of pine timber was, and you will find interesting and valuable data in the reports of the forest rangers who made the examination as to the enormous quantity of young pine that is coming up in the territory. It is situated in what was one of the greatest pine bearing regions of the Province, and there does not seem to be any reason why, if the territory is protected and conserved, it should not in the future in the course of nature be again covered with a valuable growth of pine timber.

I also refer you to Professor Zavitz' report, which is a valuable contribution

to the literature on the question, and emphasizes the wisdom of securing the territory and using it for purposes of reforestation and growing timber.

If the limits of this company can be obtained at a fair price the undersigned is of opinion that it would be important to acquire them and add them to the Park.

AUBREY WHITE,

Deputy Minister of Lands and Forests.

TORONTO, March 10th, 1914.

TORONTO, June 3rd, 1911.

DEAR SIR,—Referring to the instructions given you to examine certain limits in the Township of Hunter in the Algonquin Park, I have now to say that it is intended to make further examinations and estimates in what are known as the Ritchie limits and some small parcels owned by the Pembroke Lumber Company.

I am sending you to-day maps on which these limits are marked so that you may, as soon as your men have completed the estimates in Hunter, put them on the Ritchie limits, and when they have finished them then on the pieces owned by the Pembroke Lumber Company.

In making the estimates you will pursue the same course as instructed with respect to Hunter, except that all kinds of timber enumerated as being on old limits will have to be examined, not pine only, as in case of Berth 5, Hunter.

You will read your former instructions in matters of detail into this letter, as it is not necessary to repeat them.

Your obedient servant,

(Sgd.) AUBREY WHITE,

Deputy Minister.

CHARLES HENDERSON, Esq.,
Crown Timber Agent,
Sudbury, Ont.

SUDBURY, July 27th, 1911.

MR. AUBREY WHITE,
Deputy Minister.

DEAR SIR,—We have travelled the limits of the Pembroke Lumber Company in the Townships of Edgar, Fitzgerald and Maria on the north branch of the Petewawa River. We find the limits timbered chiefly with birch, poplar and some scattered spruce. We found no hardwood. We found a thick growth of young healthy white pine from three to nine inches in diameter all over the limits, and much thicker than the original growth of pine, and in our opinion if these limits are protected from fire that in the course of thirty years there would be a greater quantity of logs to be cut than the original growth of pine. We found a considerable quantity of this small pine that could be cut into logs that would now

measure eight and nine inches. We found some scattering large pine, but no large quantity. We found no indication of any recent fires. We find the opportunity for reforesting is greater in this section than any we have travelled owing to growth of young pine.

Your obedient servants,

(Sgd.) R. A. Allen,
(Sgd.) D. Wilson.

Toronto, January 2nd, 1913.

Dear Sir,—The Department has determined to have an inspection and estimate made of the merchantable timber growing upon certain limits and parts of limits lying partly within and partly without Algonquin Park. These limits are under license to the Pembroke Lumber Company, and their licenses outside the Park cover all varieties of timber. Those inside the Park cover pine, spruce, hemlock, black and yellow birch, cedar, black ash and tamarac timber, and these are the timbers which you will have to estimate, so far as territory inside the Park is concerned. On that outside the Park all varieties of timber are covered by license and must be estimated. The lands included in these licenses have never been opened for settlement, and it is not expected that there has been any squatting or settlement upon them—at least so far as the Department is aware there is none—but if you come across any squatter or improvements of any kind you will be careful to ascertain by whom they were made and when.

The Minister has directed that the examination of this territory should be placed under your direction and that for the present you will place two parties in the field—one under the charge of Mr. Huckson of Sault Ste. Marie, and the other under the charge of Mr. Webster, your assistant. I am sending you herewith blue prints of each Township on which there is any timber license issued in the name of the Pembroke Lumber Company. On these prints the lots to be examined are marked, and in addition I am sending you a list of the lots covered by each license. Also a general map of the country on which the whole territory intended to be inspected is marked with dotted lines, and you will be careful to confine your estimating to the territory within these dotted lines. The parts of these limits lying outside the dotted lines are not intended to be examined at the present time.

As soon as possible after you receive these instructions you will place the parties in the field. You will be at liberty to engage such assistants as will be required for the purpose of packing, cooking, moving camp, etc., and you will supply these parties with all camp equipage necessary.

The chief estimators will be paid $7 per day and their keep. The assistants you will be careful to obtain at going rates of wages, and they will be boarded by us. It may be that Mr. Bartlett, the Superintendent of Algonquin Park, will be able to place some of his rangers at your disposal from time to time, and also advise you as to how best to get your men into the territory they are going to examine.

In making the estimation I think it would be well, so far as possible, to divide the area into one-thousand-acre blocks and get an estimate of the kinds, quality and quantity of each variety of timber in feet, board measure, which is upon each

block. These townships are surveyed into 100 acre lots. The concessions are a mile and a quarter apart, running nearly east and west, and the side lines are a mile and a quarter apart, running north and south, so you will have open lines around each block of one thousand acres. It may be that these lines will be grown up so as to be difficult to distinguish, but experienced men such as your rangers will be able to find the old lines and re-blaze them—the object of this being to make sure that the estimate of each block of one thousand acres is correct.

In making the estimates everything is to be covered. All kinds of timber are to be estimated from a diameter of six inches on the stump up, and you must caution your estimators to be very careful and precise in getting information so that the Department may absolutely rely upon the estimates of the quantities of timber made by them. I think it will be well to have the spruce timber estimated in cords as well as in feet, board measure. All other merchantable timbers should be distinguished separately and estimated separately in feet, board measure, except where you are estimating outside the present Park limits, in which case the hardwood, which may not be suitable for lumber, but is suitable for use by chemical companies, should be estimated in cords. We also desire to have from your rangers a report on the character of the soil so that we may know whether the country is rocky or swampy, and have such general information as will enable us to decide whether the country is better suited for growing timber than for settlement.

It has been represented to the Department that there is a thrifty growth of young pine coming up all over these limits, and that this growth is not only dense but healthy. While this small timber cannot be taken into account in an estimate made of merchantable timber as of to-day, there is no doubt that if preserved from destruction by fire it will become a very valuable asset. It would cost a very large sum of money to plant pine seedlings over a large area and take a long period of years to bring such seedlings to the stage of growth which, we are informed, the young pine on this territory has already reached.

With a view to getting the facts in connection with this young growth the Department is asking its Forester, Prof. Zavitz, to visit the limits while your estimators are there and make an inspection or inspections and report upon the density and thriftiness of this young timber. Any assistance he may require you will afford him, if at all possible to do so.

In addition to your general estimate of the timber and to the report of Prof. Zavitz, the Department desires that your rangers shall take careful notice of this young growth of pine so as to report over what limits or parts of limits or townships it extends, if it is a dense and healthy growth, and if the timber is likely to grow into a valuable asset if taken care of. The Department suggests that your rangers ascertain the age of the trees by the usual method and note the difference in age, if there should be any, on the different limits or localities.

It is also desired that on the different limits in such localities as you can get an average growth of timber covered with young pine or other timber that you shall count the small trees and give us their average size and about how long, in your opinion, they have been growing, and that you should give us, too, an average of the large trees in feet, board measure, upon an average acre.

You will be careful to ask your rangers to give us information as to the character of the country where this young timber is, and what could best be done in the way of fire ranging to protect and conserve it. If your rangers or you yourself are able to put a value upon this young timber the Department would be pleased to have your opinion as to its value on the different limits. You will

instruct your rangers to report what streams run through the townships and if they are driveable, and the average haul of the timber in each block to floatable waters.

You will have your rangers keep a diary in which they will enter their travels from day to day, the routes followed, the lots examined, and the quantities of timber found upon them, and such other information as will enable the Department to have a close grasp of how accurately this work was carried on. This diary and the estimates of your rangers from day to day must not be exhibited or shown to anyone except yourself until they are sent to the Department for its information, and you will be careful to see that no information leaks out as to the quantities of timber upon the limits. When a township or limit is completed I think it would be well to send in the report with respect to it, showing the amount of timber and cost of the inspection. Later on the diary for the whole work can come in. If you make payments for supplies you will be careful to take vouchers in triplicate for same and send them in with the account of the expenditure in connection with this work. Your estimators and assistants placed with them will be paid for Sundays. You will be good enough to put yourself in communication with Mr. Huckson, Mr. Webster and Mr. Bartlett, so as to get this work under way at once. As soon as your men are placed in the forest you had better let me know so we can inform Prof. Zavitz where he can reach them. I think it would be wise to take one township or part of a township and complete it before taking up another part, and not have two parties estimating the same township at the same time, as we may perhaps require to have them check one another.

If you require any further information we will be glad to give it to you, or such advice as you desire from us. You will furnish your chief rangers with a copy of these instructions, and for this purpose I am sending you two copies of same—one for each of your chief rangers—as well as the original to be retained by yourself. I am sending you two sets of maps, and two general maps. If you require any further maps we will have them prepared for you.

Agreeable to your request contained in your letter of the 30th ult. I have instructed that a tent of the dimensions of 10 x 12, fitted with an asbestos ring for a stove pipe, be expressed to you. The other supplies and equipage that may be necessary you will no doubt have on hand.

Yours truly,

(Sgd.) Aubrey White,

Deputy Minister.

Chas. Henderson, Esq.,
Crown Timber Agent,
Sudbury, Ont.

P.S.—While the instructions so far as the young timber is concerned read as though it was confined to pine, I think it would be well to take into account the young growth of other timber and give us your views about it.

TORONTO, February 25th, 1913.

DEAR SIR,—I think it is important that you should go into the exploration that is being made on the Petewawa limits as soon as possible. You can get in by Bissett's Creek, Mackie Station, or up the south branch of the Petewawa from Pembroke, as there are roads broken from these places. If a thaw should come you might not be able to get in without great trouble and hardship, and therefore I am writing you so that you can go at once.

You will be able to see the limits now better than you would at any other time, as you can get about better. Please give this your immediate attention. I shall be glad to see you before you go out if you should pass through here.

Yours truly,

(Sgd.) AUBREY WHITE,
Deputy Minister.

PROF. E. J. ZAVITZ,
Provincial Forester,
Ontario Agricultural College, Guelph, Ont.

SUDBURY, March 12th, 1913.

MR. AUBREY WHITE,
Deputy Minister.

DEAR SIR,—Enclosed find W. A. Webster's report of that portion of the Pembroke Lumber Company's limits on the north branch of the Petewawa River travelled by him. I am sending under separate cover the township maps, also the district map showing the roads that have been opened up to the line of the C.N.R. under construction. The territory travelled by Webster is marked by a yellow line. You will also find the memorandum book in which he kept a record of his work, showing daily averages of an acre of ground, counting the number of young pine and the size of the same.

Your obedient servant,

(Sgd.) CHAS. HENDERSON.

SUDBURY, March 11th, 1913.

MR. AUBREY WHITE,
Deputy Minister.

DEAR SIR,—In accordance with your instructions of January 2nd, I herewith beg to submit my report of the estimate of timber on the different berths in the Townships of Edgar, White and Fitzgerald, on the north branch of the Petewawa River, and Bisset's Creek. I found no settlers on any part of the different berths. The land is rough, rocky, and in some parts very mountainous, with some swamp

land, all of which is totally unfit for agricultural purposes. I endeavored to follow my instructions as closely as possible, and in some parts was able to estimate the timber in one thousand acre blocks, but owing to the greater portion of the lines having become grown up so that it is impossible to each lot. Where I was unable to find the lines accurately I made a daily average of an acre of ground, and have based my estimate on that average, in which I was very careful to make a close estimate. I found a healthy growth of young pine, chiefly white pine, all over the berths. In some parts there was a very heavy growth. In parts I found an average of 700 young pine per acre from three inches to six inches in diameter. In addition to estimating the quantity of merchantable timber of all kinds, I made a daily count of young healthy pine per acre, and kept a record of such count for your information. On the township maps supplied me I have marked with a yellow pencil the location of the merchantable pine where I found considerable quantities. The following estimates will give you the quantity of timber within the Algonquin Park Lines separate from the timber outside the Park on the different berths.

The north branch of the Petewawa River is a good floatable stream, and the timber on the berths in the Townships of Edgar and White could be watered on an average haul of two miles.

The south branch of Bisset's Creek has been improved some years ago and would have to be repaired at a heavy cost, but the timber could be watered on Big Lake at an average haul of four miles. I find that the contractors on the Canadian Northern Railway have opened up two roads through the limits from the C.P.R., one from Bisset's Station to Lake Travers, and one from Mackie Station to Grand Lake, and they have a large force of teams employed in drawing in supplies for the summer work. These roads will likely be used in the summer in sending men in to the work, and there will be considerable danger from fire, and the roads should be well patrolled by fire rangers.

The following is the estimate of the different kinds of timber on the different berths:—

Township of Edgar, License No. 54 of 1910-11.

(Area about 17 miles.)

White pine merchantable	60,000 feet.
Poplar pulpwood	5,800 cords.
Spruce pulpwood	1,250 "
Balsam pulpwood	1,475 "
Maple, birch and beech	5,300 "

Average young healthy pine per acre, 65; average size, 3 inches; average young healthy pine per acre, 8; average size, 6 inches; equal to 794,240 trees.

Township of Edgar, Part of License No. 58, 1910-11.

(Area about 10 miles.)

White pine	8,000 feet b.m.
Red pine	2,000 "
Spruce pulpwood	3,000 cords.
Balsam	600 "
Poplar	600 "
Maple, birch and beech	2,800 "

Average young healthy pine per acre, 70 trees; size, 3 inches; average young healthy pine per acre, 8 trees; size, 7 inches; equal to 499,200 trees.

Township of Edgar, License No. 51 of 1910-11.

(Area about 13 miles.)

Black ash merchantable	1,500 feet b.m.
Spruce pulpwood	1,750 cords.
Balsam pulpwood	1,500 "
Poplar pulpwood	1,500 "
Birch, beech and maple	1,000 "

Average young healthy pine per acre, 700 trees; size, 3 inches; average young healthy pine per acre, 10 trees; size, 6 inches; equal to 5,907,200 trees.

Township of Edgar, Part License No. 52, 1910-11.

(Area about 17 miles.)

White pine, merchantable	40,000 feet b.m.
Red pine, merchantable	20,000 "
Black ash	4,700 "
Spruce pulpwood	3,200 cords.
Balsam pulpwood	4,450 "
Poplar pulpwood	4,000 "
Maple, beech and birch	22,000 "

Average young healthy pine per acre, 69 trees; size, 3½ inches; average young healthy pine per acre, 12 trees; size, 7 inches; equal to 881,280 trees.

Township of White, Part License No. 58, 1910-11.

(Area about 3 miles.)

White pine merchantable	1,000 feet.
Spruce pulpwood	400 cords.
Balsam pulpwood	700 "
Poplar pulpwood	3,000 "
Birch, beech and maple	5,000 "

Average young healthy pine per acre, 25 trees; size, 3 inches; equal to 48,000 trees.

Township of White, Part License No. 54 of 1910-11.

(Area about 11 miles.)

White pine merchantable	150,000 feet.
Red pine merchantable	500,000 "
Spruce merchantable	11,000 "
Black ash merchantable	1,000 "
Spruce pulpwood	975 cords.
Balsam pulpwood	600 "
Poplar pulpwood	1,650 "
Birch	1,550 "
Jackpine ties	5,000 ties.

Average young healthy pine per acre, 67 trees; size, 2½ inches; average young healthy pine per acre, 2 trees; size, 7 inches; equal to 485,760 trees.

Township of White, Part License No. 52, 1910-11.

(Area about 10 miles.)

Red pine merchantable	35,000 feet.
Spruce pulpwood	125 cords.
Poplar pulpwood	500 "
Maple, birch and beech	1,190 "
Jackpine ties	5,000 ties.

Average young healthy pine per acre, 55 trees; size, 3 inches; average young healthy pine per acre, 3 trees; size, 6 inches; equal to 371,200 trees.

Township of White, License No. 53, 1910-11, Algonquin Park.

(Area about 7 miles.)

White pine merchantable	15,000 feet.
Red pine merchantable	15,000 "
Spruce pulpwood	25 cords.

Average young healthy pine per acre, 130 arees; size, 3 inches; average young healthy pine per acre, 2 trees; size, 6 inches; equal to 591,360 trees.

Township of White, License No. 55, 1910-11, Algonquin Park.

(Area ¼ mile.)

Red pine merchantable	500 feet b.m.

Average young healthy pine per acre, 125 trees; size, 2½ inches; equal to 20,000 trees.

Township of Fitzgerald, Part License No. 58, 1910-11.

(Area about 5 miles.)

White pine merchantable	100,000 feet.
Red pine merchantable	20,000 "
Spruce merchantable	10,000 "
Hemlock merchantable	50,000 "
Black ash merchantable	2,000 "
Spruce pulpwood	750 cords.
Balsam pulpwood	1,000 "
Poplar pulpwood	500 "
Birch, beech and maple	15,000 "

Average young healthy pine per acre, 20 trees; size, 2½ inches; equal to 64,000 trees.

Township of Fitzgerald, Part License No. 61, 1910-11.

(Area about 21 miles.)

White pine merchantable	1,050,000	feet.
Red pine merchantable	5,000	"
Spruce merchantable	305,000	"
Hemlock merchantable	2,000,000	"
Black ash merchantable	36,000	"
Elm merchantable	5,000	"
Cedar telegraph poles	3,000	
Spruce pulpwood	18,000	cords.
Balsam pulpwood	40,000	"
Poplar pulpwood	700	"
Birch, beech and maple	165,000	"

Average young healthy pine per acre, 80 trees; size, 3½ inches; average young healthy pine per acre, 1 tree; size, 6 inches; equal to 1,088,640 trees.

Township of Fitzgerald, Part License No. 60.

(Area 5½ miles.)

Spruce pulpwood	150	cords.
Balsam pulpwood	250	"
Poplar	4,000	"
Maple, beech and birch	25,000	"

Average young healthy pine per acre, 150 trees; size, 4 inches; average young healthy pine per acre, 10 trees; size, 6 inches; equal to 563,200 trees.

Township of Fitzgerald, Part License No. 56, 1910-11.

(Area about 2½ miles.)

White pine merchantable	15,000	feet.
Spruce pulpwood	100	cords.
Balsam pulpwood	200	"
Poplar	3,000	"
Birch, beech and maple	15,000	"

Average young healthy pine per acre, 60 trees; size, 3 inches; average young healthy pine per acre, 1 tree; size, 3 inches; equal to 97,600 trees.

Township of Fitzgerald, License No. 62, 1910-11, Algonquin Park.

(About 3½ miles.)

White pine merchantable	1,250,000	feet.
Red pine merchantable	25,000	"
Spruce merchantable	50,000	"
Hemlock merchantable	10,000	"
Maple, birch and beech	10,000	cords.
Spruce pulpwood	5,000	"

Average young healthy pine per acre, 25 trees; size, 3 inches; equal to 56,000 trees.

TOWNSHIP OF FITZGERALD, LICENSE NO. 57, 1910-11, ALGONQUIN PARK.

(Area about 9 miles.)

White pine merchantable	35,000 feet.
Spruce merchantable	1,000 "
Spruce pulpwood	100 cords.
Birch, beech and maple	60,000 "

Average young healthy pine per acre, 30 trees; size, 3 inches; equal to 172,800 trees.

SUMMARY.

White pine merchantable	2,719,000 feet b.m.
Red pine merchantable	622,500 "
Spruce merchantable	377,100 "
Hemlock merchantable	2,069,000 "
Black ash merchantable	45,200 "
Elm merchantable	5,000 "
Spruce pulpwood	34,725 cords.
Balsam pulpwood	50,775 "
Poplar pulpwood	25,250 "
Birch, beech and maple	328,850 cords.
Jackpine ties	10,000
Cedar poles	3,000
Total young pine trees	11,640,480 trees.

Your obedient servant,

(Sgd.) CHAS. HENDERSON.

MR. AUBREY WHITE, . .
Deputy Minister.

DEAR SIR,—While making the inspection of the limits of the Pembroke Lumber Company on the south branch of the Petawawa River I made a careful study of the age of the young pine by cutting down a few and counting the growths and by counting the branches formed by each year's growth. I made several tests, and I find the following will be a fair average:—

1	tree	1	inch	in	diameter	13	years old.
1	"	2	inches	"		18	"
1	"	3	"	"		22	"
1	"	4	"	"		26	"
1	"	5	"	"		28	"
1	"	6	"	"		30	"

all of the above are white pine. I found very little growth of red pine.

Your obedient servant,

(Sgd.) W. A. WEBSTER,

Estimator.

SUDBURY, April 26th, 1913.

MR. AUBREY WHITE,
Deputy Minister.

DEAR SIR,—Enclosed find the report of A. H. Huckson of his inspection of the Pembroke Lumber Company's limits.

Under separate cover I am mailing you his diary and memorandum book, in which he recorded his daily work of inspection.

Your obedient servant,

(Sgd.) CHAS HENDERSON.

SUDBURY, April 25th, 1913.

MR. AUBREY WHITE,
Deputy Minister.

DEAR SIR,—Obedient to your instructions of January 2nd, I herewith beg to submit my report of the estimate of timber on the Townships of Stratton, Master, Barron and Guthrie on the south branch of the Petawawa River. I have made a careful examination of every other lot on the different berths. I find a very thrifty growth of young pine; in fact the finest lot of young healthy pine I have ever seen, well distributed over the entire berths.

I have estimated all timber over 6 inches in board measure but in my opinion this timber is too small to cut into logs and should be included in the class of young growing pine. In fact it would be a mistake to have this young pine cut at the present time. Attached you will find the estimates of the different kinds of timber. For details I would refer you to the memorandum book which I kept of the different lots which accompanies this report. I also made a careful study of the ages of the different sizes of the young trees and attached you will find a statement showing the size and age of the young pine as I found them.

I would draw your attention to the danger from fire from the construction work of the C.N.R. which passes through the limits. Also along the road from Mackie Station to the line of work under construction.

Your obedient servant,

Sgd. A. H. HUCKSON,

Wood Ranger.

TOWNSHIP OF STRATTON.

Part of Berth No. 51, License 1910 and 1911.

Pine	483,840 feet
Poplar pulpwood	3,225 cords
Balsam pulpwood	4,032 cords
Hardwood	582 cords

Area about 8,960 acres.
Total young healthy pine, 504,746 trees.
Average trees per acre: 56 trees, 2 to 6 inches; 15 per cent. red pine.

TOWNSHIP OF BRONSON.

Part License No. 51 of 1910 and 1911.

Pine	1,232,264 feet
Spruce pulpwood	7,388 cords
Balsam pulpwood	12,614 cords

Area about 17,280 acres.
Total young healthy pine, 926,208 trees.
Average trees per acre: 53 trees, 2 to 6 inches; 20 per cent. red pine.

TOWNSHIP OF GUTHRIE.

Part License No. 49 of 1910 and 1911

Pine	424,000 feet

Area about 8,000 acres.
Total young healthy pine, 248,000 trees.
Average per acre: 31 trees, 2 to 6 inches.

TOWNSHIP OF BARRON.

Part License No. 49 of 1910 and 1911.

Area about 980 acres.
Total young healthy pine, 55,860 trees.
Average per acre: 57 trees, 2 to 6 inches; 25 per cent. red pine.

TOWNSHIP OF BARRON.

Part License No. 40 of 1910 and 1911.

Poplar pulpwood	2,559 cords

Area about 3,413 acres.
Total young healthy pine, 264,507 trees.
Average per acre: 77 trees, 4 inches; 20 per cent. red pine.

TOWNSHIP OF STRATTON.

Part License No. 40 of 1910 and 1911.

Pine	3,258,485 feet
Basswood	122,040 feet
Spruce	861,060 feet
Cedar	294,930 feet
Hemlock	976,320 feet
Ash	25,000 feet
Spruce pulpwood	5,085 cords
Poplar pulpwood	30,713 cords
Balsam	6,780 cords
Hardwood	10,849 cords

Area about 21,440 acres.
Total young healthy pine, 1,505,160 trees.
Average: 74 trees per acre; 15 per cent. red pine.

TOWNSHIP OF STRATTON.

Part License 41 of 1910 and 1911.

Area about 3,040 acres.
Total young healthy pine, 30,278 trees.
Average trees per acre: 99, 2 to 6 inches; 15 per cent. red pine.

TOWNSHIP OF STRATTON.

Part License 44, 1910 and 1911.

Pine		422,400 feet
Spruce pulpwood	1,536 cords	510,720 feet
Poplar pulpwood		6,970 cords

Area about 3,840 acres.
Total young healthy pine, 157,440 trees.
Average per acre: 41 trees, 2 to 6 inches.

TOWNSHIP OF STRATTON.

Part License No. 49, 1910 and 1911.

Pine	195,840 feet
Poplar pulpwood	6,419 cords
Spruce pulpwood	200 cords
Hardwood	7,670 cords
Hemlock	36,480 feet

Area about 5,440 acres.
Total healthy young pine, 443,360 trees.
Average per acre: 81 trees, 2 to 6 inches.

TOWNSHIP OF MASTER.

Part License No. 43, 1910 and 1911.

White pine	554,880 feet
Spruce	416,160 feet
Hemlock	440,536 feet
Spruce pulpwood	2,178 cords
Balsam pulpwood	2,178 cords

Area about 8,160 acres.
Total young healthy pine on above berth, 419,424 trees, averaging 4½ inches; 20 per cent. red pine.

TOWNSHIP OF MASTER.

Part License No. 50, 1910 and 1911.

White pine	512,000 feet

Area about 6,400 acres.
Total young healthy pine, 502,400 trees.
Average per acre: 78 trees, 2 to 6 inches.

TOWNSHIP OF MASTER.

Part License 48, 1910 and 1911.

Hardwood	3,840 cords
Basswood	87,168 feet

Area about 3,840 acres.
Total young healthy pine, 337,920 trees.
Average per acre: 88 trees, 2 to 6 inches.

TOWNSHIP OF MASTER.

Part License No. 49, 1910 and 1911.

Pine	347,072 feet
Oak	115,690 feet
Basswood	38,560 feet
Hemlock	811,072 feet
Poplar	10,280 cords
Hardwood	10,579 cords

Area about 18,560 acres.
Total young healthy pine, 1,178,560 trees.
Average per acre: 63 trees, 2 to 6 inches.

SUMMARY.

White pine	7,430,581 feet
Basswood	247,771 feet
Spruce	1,787,940 feet
Hemlock	2,254,376 feet
Cedar	294,930 feet
Ash	25,000 feet
Oak	115,690 feet
Poplar	60,094 cords
Spruce	16,387 cords
Balsam	25,604 cords
Hardwood	33,520 cords

Total healthy young pine, 6,573,863 trees.
Total area, 109,353 acres.
Average young trees per acre: 60 trees, 4½ inches in diameter; 18 per cent. red pine.

I made frequnt tests as to the age of the young pine of different diameters, and find as follows:—

2¼ inches in diameter	20 years and 15 feet tall
3 inches in diameter	24 years and 15 feet tall
3¼ inches in diameter	26 years and 16 feet tall
3¾ inches in diameter	28 years and 21 feet tall
4 inches in diameter	30 years and 27 feet tall
4¾ inches in diameter	30 years and 27 feet tall
6 inches in diameter	30 years and 28 feet tall

(Sgd.) A. H. Huckson,
Wood Ranger.

ESTIMATED VALUE OF TIMBER ON PEMBROKE LUMBER COMPANY'S LIMITS.

White pine	7,430,581 feet B.M. at	$7 00	$52,014 06
Basswood	247,771 feet B.M. at	3 00	743 31
Spruce	1,787,940 feet B.M. at	5 00	8,939 70
Hemlock	2,254,376 feet B.M. at	3 00	6,763 12
Cedar	294,930 feet B.M. at	1 00	294 93
Ash	25,000 feet B.M. at	1 00	25 00
Oak	115,690 feet B.M. at	3 00	346 82
Poplar	60,094 cords at	0 25	15,023 50
Spruce	16,387 cords at	1 00	16,387 00
Balsam	25,624 cords at	0 50	12,812 00
Hardwood	33,520 cords at	0 25	8,380 00
			$121,729 44

Based on Huckson's estimates as to quantities.

ESTIMATED VALUE OF TIMBER ON PEMBROKE LUMBER COMPANY'S LIMITS.

White pine	2,719,000 feet B.M. at	$7 00	$19,033 00
Red pine	622,500 feet B.M. at	5 00	3,132 50
Spruce	377,100 feet B.M. at	5 00	1,885 50
Hemlock	2,060,000 feet B.M. at	3 00	6,180 00
Ash	45,200 feet B.M. at	1 00	45 20
Elm	5,000 feet B.M. at	1 00	5 00
Spruce pulpwood	34,725 cords at	1 00	34,725 00
Balsam pulpwood	50,775 cords at	0 50	25,387 50
Poplar pulpwood	25,250 cords at	0 25	6,312 50
Hardwood, chemical	328,850 cords at	0 25	82,212 50
Jackpine (railway ties)	10,000 pieces at	0 10	1,000 00
Cedar poles	3,000 at, each	0 25	750 00
			$180,668 70
Brought forward			121,729 44
			$302,398 14

Based on Webster's estimate as to quantities.

Toronto, May 19th, 1913.

Mr. Aubrey White,
Deputy Minister of Lands and Forests,
Toronto.

Dear Sir,—In accordance with your instructions I visited the timber berths of the Pembroke Lumber Company's limits in order to give you a report upon the forest conditions of this territory, especially in relation to new growth or reproduction for the future.

I visited the berths on the north branch of the Petewawa, located in the Township of Edgar, White and Fitzgerald, in company with Mr. Webster. I visited the berths on the south branch of the Petewawa, located in the Township of Stratton, Master, Barron and Guthrie, in company with Mr. Huckson.

The topography of this country being rough with many high elevations, I was able to obtain a good general knowledge of the conditions existing. In addition to this I was able to examine Messrs. Webster and Huckson's methods of recording growth conditions, and judge that their methods should give very reliable results.

The entire region has escaped serious fires for many years and is to-day covered with a very fine growth of young white and red pine. White pine composes about 75 per cent. of the young growth, and I would consider the area sufficiently well stocked to produce another crop of pine as heavy as that originally taken off this country.

I would not consider any of the land within this region fit for agriculture. It is a rough country with rocky outcroppings and what few level stretches occur are either swampy or composed of a coarse sand, in which jackpine and red pine are the predominant type.

The following are estimates of the territory from two standpoints:

1. Provided that the territory had been artificially re-forested:

Total area of Pembroke Lumber Company's land under estimate as shown by Webster & Huckson's report	195,753 acres.
Allowance for water surface, etc., not bearing timber (about 10 per cent.)	20,000
Acres bearing timber	175,000

This area contains a stand of young growth which would average about 30 years in age and about 4 inches in diameter, with about 60 such trees to the acre. (There is considerable young growth smaller than this.) To reforest this area and bring it to the present state would involve the following expenditure:

Fully stocking or planting country such as the Petewawa with pine would cost from $10 to $12 per acre. I consider the amount of young growth of pine which has come in naturally would cost about $1.00 per acre to plant.

175,000 acres planted at a cost of $1.00 would make an initial investment of	$175.000
$175,000 at compound interest for 30 years at 4 per cent. would amount to:	567,595
Basing cost of protection or management at 1c. per acre per year would give annual expenditure of $1,750, which would amount in 30 years at 4 per cent. to	42,063
Estimated total cost at present	$609.658

2. Present value of territory based upon future yield:

The following is an estimate of the value of this property from the standpoint of the future.

Growth of pine on this area gives about 1 inch in 8 years, or it takes 96 years to produce a 12 inch tree.

At a very low estimate the territory should average 60 twelve-inch trees at 100 years of age.

(Webster & Huckson estimate an average of 60 4½ inch trees to the acre, averaging in age about 30 years.)

A 12 inch pine should cut out 100 feet B.M., and 60 trees to the acre would give 6,000 feet B.M. to the acre.

In 70 years this area should cut 6,000 feet B.M. to the acre, or 175,000 x 6,000 =1,050,000,000 feet B.M. which at $10 per thousand stumpage would give $10,500,000.

The present value of $10,500,000 discounted at 4 per cent. would equal $674,000.00.

I wish to call attention to the fact that this estimate is based upon the young growth of pine only, and does not take into account the commercial trees now standing.

This area contains a splendid second growth of pine, well distributed over the territory, and owing to the non-agricultural character of the country it would make a very valuable addition to the forest reserves of the Province.

Yours faithfully,

Sgd. E. J. Zavitz,
Forester.

Memorandum of licenses of the Pembroke Lumber Company, showing the areas situated inside the territory recently added to the Algonquin National Park.

License No. Season, 1910-1911.	Township.	Area.	
No. 57	Fitzgerald	9	square miles
No. 62	Fitzgerald	3½	"
No. 53	White	7	"
No. 55	White	¼	"
Pt. No. 56	Fitzgerald	3	"
Pt. No. 60	Fitzgerald	6	"
Pt. No. 61	Fitzgerald	20½	"
Pt. No. 58	Fitzgerald, Edgar, White	19	"
Pt. No. 54	Edgar, White	29	"
No. 52	Edgar, White	27	"
No. 51	Bronson, Edgar, Stratton	52	"
No. 40	Stratton, Barron, Bronson	40	"
Pt. No. 44	Stratton, Bronson	6½	"
Pt. No. 41	Stratton, Master	6	"
No. 49	Stratton, Master, Guthrie and Barron	50	"
Pt. No. 43	Master	13	"
No. 50	Master	12	"
Pt. No. 48	Stratton, Master	3	"
		306¾	"

Toronto, March 10th, 1914.

MEMORANDUM FOR THE HONORABLE THE MINISTER OF LANDS, FORESTS AND MINES.

With respect to the memorandum I prepared recommending the acquirement of a surrender of the Pembroke Lumber Company's limits, at the time I prepared that memorandum I did not say anything about the value put upon the timber, because I did not see any necessity for my doing so, but I desire to say now that I obtained the opinions of those who were familiar with the territory, and especially our own officers who had examined it, and I prepared the values upon what I believed to be reliable data. I personally think the values put upon the different varieties of timber were reasonable values. They may be a little higher or a little lower in some of the varieties, but upon the whole the prices are, in my opinion, fair.

I think, for the reasons stated in my former memorandum, it is of importance that this surrender should be obtained, and I would recommend the closing of the purchase of these limits at the prices fixed in the memorandum and in the Bill.

(Sgd.) AUBREY WHITE,

Deputy Minister.

Toronto, April 14th, 1914.

SUDBURY, April 6th, 1914.

MR. AUBREY WHITE,
Deputy Minister.

Re Pembroke Lumber Coy. Limits.

DEAR SIR,—I have looked over carefully the prices placed on the different kinds of timber on these limits, and consider the prices very reasonable. In my opinion the prices are under rather than over in some cases having been on the limits and seen the timber.

Your obedient servant,

(Sgd.) CHAS HENDERSON.

SUDBURY, April 11th, 1914.

MR. AUBREY WHITE,
Deputy Minister of Lands and Forests,
Toronto.

DEAR SIR,—Referring to the values placed on the timber on the Pembroke Lumber Co. limits examined and reported on by me, I find on going over the prices carefully they are in my opinion very reasonable.

In my report on that part of the limits within the boundary of the park being part of license 62 3½ miles and license 57 nine miles, I only estimated the birch in the hardwood and maple and beech should not have been included.

Regarding the hardwood on these limits which I found of superior quality for chemical or other purposes it is not equally distributed all over the limits but in blocks chiefly on the high ground and the wood coud be delivered to the railway at a reasonable haul.

Your obedient servant,

(Sgd.) W. A. Webster.

Sault Ste. Marie, April 11, 1914.

Aubrey White, Esq.,
Deputy Minister of Lands and Forests,
Toronto.

Dear Sir,—In reply to yours of the 9th inst. *re* prices put on timber of the Pembroke Lumber Co'y, I beg to say, that I have looked the memo over carefully and have no hesitation in saying that all the prices are *very, very* reasonable.

Now as to the hardwood being scattered all over the park, such is not the case. This hardwood is adjacent to the C. N. R. and certainly could be marketed very reasonable, and would further say that in the writer's opinion this deal is as good a proposition as could be put through and will *stand the closest investigation.*

Yours truly,

(Sgd.) A. H. Huckson,

Provincial Fire Ranger.

April 13th, 1914.

Aubrey Whhite, Esq.,
Deputy Minister of Lands, Forests and Mines,
Toronto, Ont.

Dear Sir,—In reference to the Pembroke Lumber Company limits in Master, Stratton and Guthrie Townships, I beg to submit the following:

The limits are well wooded with hardwood, poplar, balsam, spruce and hemlock. The hardwood is of a very fair quality and is not scattered over the proposed park but is adjacent to the right-of-way of the Canadian Northern Railway so that it can be easily lumbered. In none of the lands which I inspected would there be a haul of a greater distance than three miles. The price of 25c. per cord is far below the actual value of the timber.

In my estimation 25c. per cord for poplar, 50c. per cord for balsam, $7.00 per M. for white pine, $3.00 per M. for hemlock and $5.00 per M. for red pine and spruce, is below the actual value of the timber. This timber could be lumbered now to advantage and would realize more than these prices.

I have the honour to be,

Sir,

Your obedient servant,

(Sgd.) A. H. Huckson,

Supt. of Rangers.

REPORT

ON

ROAD CONSTRUCTION

UNDER

2 GEO. V., CHAP. 2

1913

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Report on the Construction of Roads in Northern Ontario

(Under the Provisions of 2 Geo. V., chap. 2.)

To the Honourable W. H. Hearst,
Minister of Lands, Forest and Mines.

Sir,—I have the honor to submit a general report of the work done in the construction of roads in Northern Ontario for the season of 1913, in conformity with the Provisions of the Act 2 Geo. V., chap. 2.

Attached to this report is a description of the different works performed.

The season's work commenced in the latter part of April, except in a few instances where it was found profitable to construct bridges, and take out timber for crosslaying during the winter season.

The season was found very favorable for road construction, and considerable progress has been made. The operations extended from the Quebec boundary on the east to the Rainy River Valley and Keewatin on the west.

During the season, 764 miles of road were constructed or partly constructed and improved. Of the total mileage, 500 miles were graded, part of the graded road being macadamized or re-surfaced; 279 miles of the total were cut out of the virgin forest.

A good deal of the work of the season of 1912 consisted in cutting out new roads, which, however, owing to the wet season it was found impossible to burn off. In 1913 all of these roads have been burnt off and many of them graded and ditched. Several of the roads cut out this season, although burnt off and suitable for winter traffic, have not yet been graded.

The sum of $1,081,172.28 has been expended during the past year, up to the 31st of October, on the operations, thus making a total expenditure out of the $5,000,000 loan of $1,274,255.08.

As the operations extended over a very large area it was necessary to purchase a good deal of machinery and camp outfit to carry on the work. This machinery has been well cared for, and will serve for a good many years.

In the older sections the trunk roads as constructed were carefully selected where they could be made most permanent at the least cost; and where they would serve the greatest number of people, taking into consideration the newer sections which would be opened up later on. The old roads often followed the ridges or high land and were in many instances found crooked and unsatisfactory as to grades or drainage. These were straightened out, the grades modified, and special attention given to drainage; old culverts were replaced with more permanent ones; the materials used consisting of stone, corrugated iron pipe or durable wood where it could be procured. Swampy or low lands were well drained, corduroyed in places, and re-surfaced with gravel or stone. Many of the old bridges had to be renewed.

In the district of Temiskaming along the line of the Temiskaming and Northern Ontario Railway and its branches, and along the Grand Trunk Pacific Railway, east and west from the Town of Cochrane, it was found necessary, besides constructing trunk roads along the boundaries of townships and through

the centres, to construct a good many short roads in the interior of the townships, in order to give settlers who had located on their lands, and were making substantial clearings, an outlet to these trunk roads. This also was found necessary, inasmuch as there were few settlers, children had to walk long distances in order to reach a school, and many miles of road had to be made for that purpose.

I am glad to be able to report that the work of the season of 1912 appears to have given very much encouragement to the incoming settlers, and this last year has witnessed more *bona fide* work on the land by the settlers than I have previously observed for many years. I refer more particularly to the country in the vicinity of the town of Cochrane and along the line of the Temiskaming and Northern Ontario Railway from Cochrane south to Englehart and Earlton, and along the Charlton branch to Charlton. Large clearings with good substantial farm buildings are to be met with almost everywhere.

Along the roads constructed in 1912 most of the lots have been settled upon and small clearings made, and I have every reason to believe that if the work, as it is now being carried on, is continued for a few years there will be found in the Claybelt along the Temiskaming and Northern Ontario Railway and Grand Trunk Pacific Railway settlements as prosperous as are to be found in the district of Rainy River, or in the country in the vicinity of Haileybury and New Liskeard.

From my experience during the last two seasons in the construction of roads north of Englehart and over the height of land, I am the more fully confirmed in my opinion, and have not the smallest doubt of a successful future from an agricultural standpoint, for that district, provided that, as at present, settlement for the next few years is confined as far as practicable, to the most promising areas, so as to ensure large clearings whereby the climatic conditions may be improved. Little or no difficulty was met with in draining all the roads in the Claybelt which were graded and ditched last season. Much difficulty, however, is found in making permanent roads, for want of gravel or stone, which is seldom met with in that district.

In the valley of the Rainy River, which comprises an area of about three-quarters of a million acres of good agricultural land, I have found that sections are still unoccupied; and in other sections, during the last fifteen years the development which might have been expected has not taken place, owing in some measure to the want of roads. The continuation, however, for a year or two of the work commenced in 1913 will remove this difficulty, and I am confident that settlers will go into this district in the future in greatly increased numbers, as the land is nearly all of good quality.

On my first visit to the Rainy River Valley, over twenty years ago, I found the conditions there almost similar to those in the Claybelt to-day. The character of the country, its soil, and its climatic conditions are almost identical. It is in the same latitude, and to-day in the Rainy River Valley where settlement has taken place, and large clearings made, all kinds of grains and vegetables are produced in abundance. Summer frosts are almost of the past.

In the districts of Nipissing, Sudbury, Algoma, Thunder Bay, and Kenora, the trunk roads as constructed or improved will make it possible for the settlers to reach markets for their produce at all seasons of the year. Other roads are required in these districts to make it possible for the settlers in the out-lying sections to reach the main trunk roads. Several of the trunk roads as graded last season still require to be surfaced in places with gravel or stone. It was found impossible in one season to complete many of the roads.

The mining roads constructed into the Kirkland Lake Goldfields and the West Shining Tree Goldfields will give to the miners in those sections an opportunity of developing the several mining prospects opened up: the road from Iroquois Falls Junction on the Temiskaming and Northern Ontario Railway to the pulp mills at Abitibi River will give to the settlers in that vicinity an opportunity of hauling their pulp timber and other produce to the mills.

Fair progress has been made by the settlers in the vicinity of Cochrane both east and west therefrom. Already settlement has reached a point about nine miles north of the Grand Trunk Pacific Railway in the valleys of the Abitibi and Frederickhouse Rivers. Quite a settlement has taken place in the vicinity of Hearst at the junction of the Algoma Central and the Grand Trunk Pacific Railways, not only on the lands of the Crown but on the railway lands of the Algoma Central Company. Twenty-nine miles of road were cut out and part graded in this section.

Work was commenced at Ground Hog River on the Grand Trunk Pacific Railway 50 miles west of Cochrane. A few miles of trunk road were cut out along the railway, where a considerable settlement has already been made. This is one of the most promising areas in the Clay belt. At this point there is a large section of country which was burnt years ago and is now easily cleared. Vegetables of all kinds have matured here at the headquarters of the railway contractors.

Trunk roads have been constructed west of Cochrane as far as the township of Kendrey, the lands of the New Ontario Development Company on the Matagami River. This company is making good progress. Approximately 400 acres have been chopped and burnt over, of which 300 acres have been logged and fairly well drained. The following plant and machinery has been installed: A large saw mill with a capacity of 60,000 ft. B.M. per day, six rossing machines with a capacity of 50 cords of pulp wood per day and a first-class planing mill.

Sixteen private dwelling-houses have been erected for employees and settlers and two large boarding-houses with accommodation for 100 men. A general store has also been built, together with a post-office and a schoolhouse, the latter being used also as a church. Upwards of ten miles of a fairly good type of colonization roads have been constructed by the company.

In the descriptions of the several roads hereinafter given, information will be found respecting the operations in the various districts.

Accompanying the report is a statement of expenditure in the different districts and of the number of miles of road constructed or under construction.

I have the honor to be,

Sir,

Your obedient servant,

J. F. Whitson,

Road Commissioner.

2 Geo. V. Chap. 2.

STATEMENT OF EXPENDITURE ON ROAD CONSTRUCTION, AND MILEAGE CONSTRUCTED,

FROM 23RD MAY, 1912, TO 31ST OCTOBER, 1913.

1912.		1913.	
Total number of miles of new road cut out in 1912.....	210 miles	New and old roads graded in 1913	500 miles
(Of which were graded, 39 miles.)		New and old roads partially graded	40 miles
Old road improved	23 miles	New bush roads cut out ready for grading and old roads improved	224 miles
Total number of miles of road under construction, 1912...	233 miles	Total number of miles of road under construction, 1913...	764 miles

In 1912 the total expenditure was along the Temiskaming and Northern Ontario Railway and branches; and along the Grand Trunk Pacific Railway, in the Districts of Temiskaming and Sudbury.

In 1913 the work was spread over all Northern Ontario, from the Quebec Boundary to the Manitoba Boundary; in the Districts of Nipissing, Temiskaming, Sudbury, Algoma, Thunder Bay, Kenora and Rainy River.

District.	Expenditure to 31st Oct., 1912.	Expenditure to 31st Oct., 1913.	Mileage constructed and under construction 1913.	Number of miles of bush road cut out.
District of Nipissing, North Bay to Mattawa	.....	83,313 38	48	4
District of Temiskaming, Haileybury to Englehart, Matheson, Charlton, Swastika	.....	185,612 61	150	50
District of Temiskaming, Cochrane, Porcupine, Iroquois Falls & Trans. Ry. from Quebec Boundary west 125 miles to Ground Hog	182,523 93	230,704 37	190	138
District of Sudbury, vicinity of the Town of Sudbury and West Shining Tree Mining District	.....	118,568 32	72½	19
District of Algoma, vicinity of Hearst along G. T. P. Ry. and Junction of Algoma Central	3,866 71	18,529 61	29	29
District of Algoma, between Blind River and Sault Ste. Marie, on Sudbury & Sault Ste. Marie Rd.	.....	76,275 40	35	.....
Thunder Bay, tributary to Port Arthur and Fort William	.....	123,247 31	107	4
District of Kenora, vicinity of Kenora & Keewatin & N. W.....	.....	95,533 58	23½	12
District of Rainy River, in Rainy River Valley	.....	135,031 31	109	23
General Administration Expenses	6,692 16	14,356 39	.....	.....
	$193,082 80	$1,081,172 28	764	279

Summary of Expenditure:—

1912	$193,082 80
1913	1,081,172 28
Total Expenditure	$1,274,255 08

J. F. WHITSON,
Road Commissioner.

ARTHUR E. D. BRUCE,
Secretary and Accountant.

ROADS IN RAINY RIVER VALLEY, DISTRICT OF RAINY RIVER, CONSTRUCTED IN 1913.

Number of miles of roads constructed or improved and regraded	109
Number of miles of ditches constructed	32½
Number of miles of tap or offtake drains constructed	9¼
Number of miles of road resurfaced with gravel	30
Number of wooden culverts constructed	202
Number of pile bridges constructed	12
Amount expended during 1913	$135,031 31

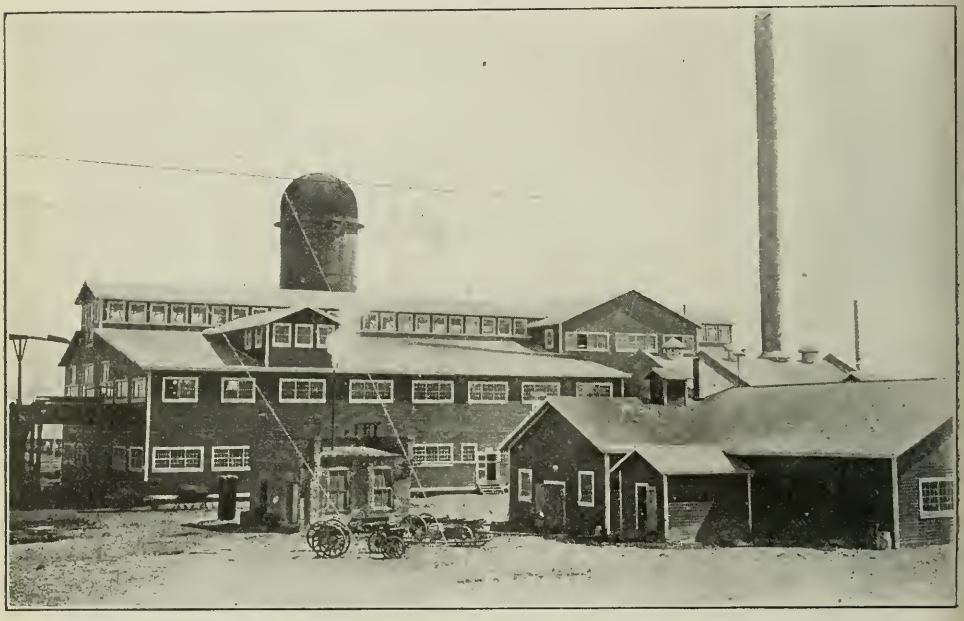
The beautiful banks of the Rainy River, west of Pinewood.

A trunk road was commenced at the town of Fort Frances opposite the site of the Hudson Bay Company's old post and continued westerly for 60 miles through the valley of Rainy River to near the town of Rainy River, where the Canadian Northern Railway crosses said river into the State of Minnesota, passing through the villages of Crozier, Lavalee, Devlin, Emo, Barwick, Stratton, Pinewood and Sleemen to Rainy River, crossing Indian Reserves Nos. 11, 12, and 13 at the Manitou and Long Sault Rapids. The road follows the best possible grades where it could be constructed at the least possible cost and at the same time where it would serve the greatest number of settlers.

The country passed through can be described in a general way as a first-class

agricultural section, the soil chiefly clay and clay loam, level or gently rolling with few rock outcrops. Here and there muskegs are met with or large tamarac swamps but all of them can with a reasonable amount of expenditure be drained and made good farm lands. Most of the valuable timber has in the last twenty-five years been cut off, either for railway ties, telegraph poles, piling or saw logs, in the townships within twelve miles of the Rainy River. Here and there an occasional farm is still well timbered, and in every instance there is sufficient timber left for fuel and for building purposes for the settlers for many years to come.

In 1897 and again in 1909 two very destructive fires swept over parts of the valley. The first fire crossed the river from Minnesota, near Stratton, and almost completely destroyed the timber on several townships in that locality. Later on, in 1909, a similar fire crossed the river from Beaudet and Spooner, on the American



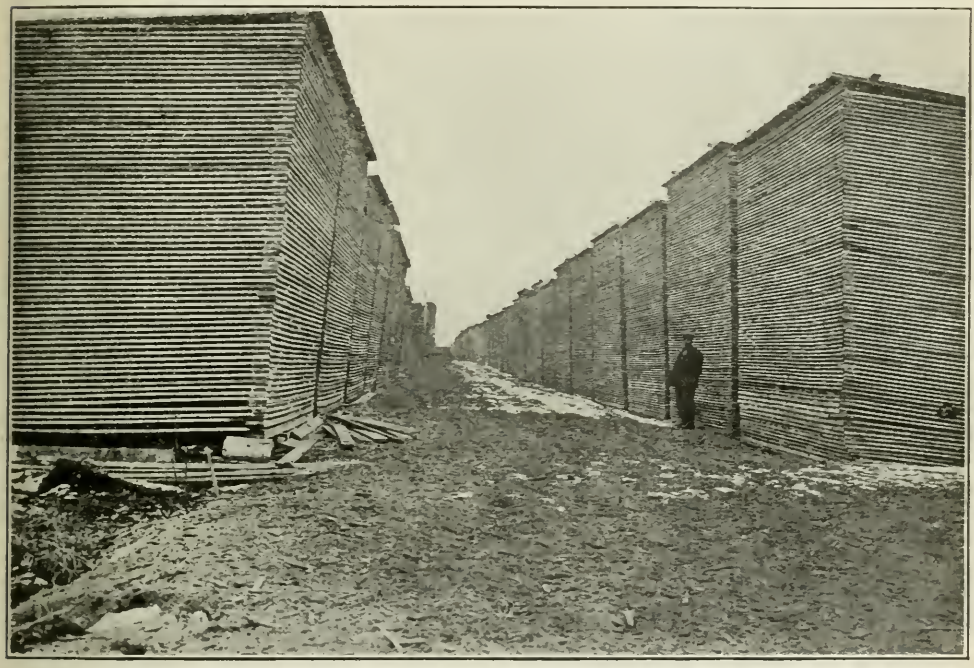
Shevelin & Clarke's Saw Mills at Fort Frances. Capacity, 750,000 feet per day.

side, entering Ontario at the town of Rainy River and swept in a northerly and north-easterly direction over a very large area. Much of the country swept over by these two fires was left in a condition almost ready for the plough. The deep muskegs, before these fires occurred gave to the country the appearance that it would never be suitable for agricultural purposes; these swamp lands, owing to the burning of the muskeg, have had an opportunity of draining, and are now some of the best farming lands in the valley. Almost every lot along the Trunk Road between Fort Frances and Rainy River has been located. Large clearings have been made in many instances and first class buildings constructed, the country has every appearance of being a prosperous agricultural settlement.

These remarks apply to the townships fronting on the river and adjacent to the line of the Canadian Northern Railway. About twelve miles inland, however, from the river, the conditions are somewhat different, owing, to some extent at least, to the want of good roads. Large clearings and well cultivated farms are not very frequently met with in this section, notwithstanding the fact that the land

is of a first-class quality. A continuation for a few years of the work commenced last season will remove all difficulties in the matter of roads, and I am confident that settlers will go into this district in the future in greatly increased numbers.

During last season a trunk road was constructed from Lavallee on the Main Trunk Road south to Rainy River, a distance of six miles. From the town of Emo a trunk road was constructed north a distance of five miles, and from the town of Barwick a Trunk Road was constructed north six miles. From Pinewood a road was constructed north four miles, and from Sleeman a main trunk road was constructed from the railway to the Little Grassy River, a distance of 16¾ miles. This last mentioned road opens up a large section of first-class farming country in which fair progress has been made by the settlers. Several short roads were constructed in different places throughout the valley, where the settlers were



Shevelin & Clarke's Lumber Yard, Fort Frances. Quantity, 100,000,000 feet in December, 1913.

in most need of an outlet. All of these north and south trunk roads when extended further north will open up new sections and give to the present settlers a means of reaching a market on the Canadian Northern Railway which they have been long in need of.

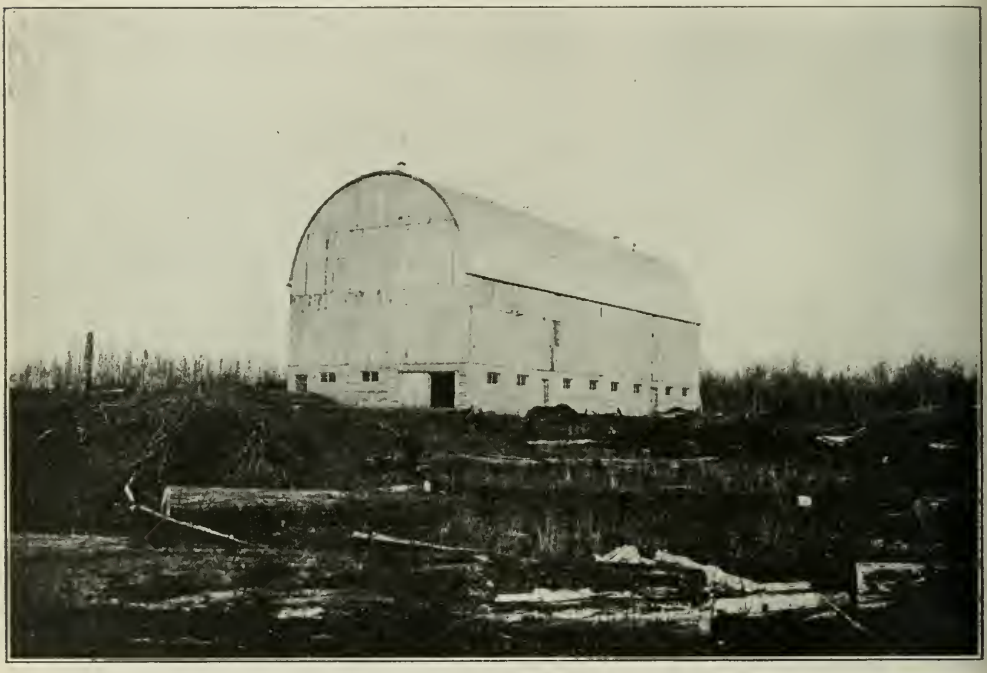
Nearly all these roads have been well graded and ditched; thirty miles have been surfaced with gravel, 202 substantial wooden culverts of cedar and tamarac have been constructed and twelve pile bridges of the most durable material built; 9½ miles of tap drains had to be constructed in order to get the water away from the roads; 32½ miles of road ditches were dug of sufficient size to not only drain the road bed, but to assist the settlers in draining their lands, old roads where they were found too narrow were widened and reditched.

Following is a description of the various roads, on which was expended $135,031.31.

DESCRIPTION OF ROADS CONSTRUCTED.

Road between Fort Frances and Rainy River.

Road between town of Fort Frances and the town of Rainy River, commencing at the western boundary of the town of Fort Frances in Section 30, township of McIrvine, thence westerly along the old River Road 1,640 feet. From here a new road was built, running west 6,575 feet to the east boundary of Section 24, Township of Crozier; thence south 900 feet to the north-east corner of Section 13, Crozier; thence west 3 miles on old road along the north boundary of sections 13, 14 and 15, thence north one mile to the north-east corner of section 21; thence west 7 miles to the north-east corner of section 20, Township



Mr. Crawford's New Barn, north of Emo, Township of Carpenter. Concrete foundation; length, 106 ft.

of Devlin; thence north one mile to the north-east corner of section 29, Township of Devlin; thence west 7 miles to the north-east corner of section 30, Township of Lash; thence south half a mile to the village of Emo. This road has all been graded and well ditched from Fort Frances to Emo. Between these towns, 3½ miles of new road were cut out, graded and ditched. The remainder followed the old road which in many places was so narrow that two teams could barely pass. These ditches had to be reconstructed.

Along this road twelve and a half miles of ditches and two and a half miles of tap drain were dug. Fifty-four culverts and a pile bridge sixty-one feet in length across the La Vallee River at La Vallee, were built. Seven and a quarter miles of this road were surfaced with gravel. The remainder of the gravelling was left to be completed after the freeze-up when the work could be done at less cost, as the roads in the fall were very wet and would cut up badly

if heavy loads were drawn on them. Eleven miles of this road still requires in places gravel, to make a first class road between Fort Frances and Emo.

This road passes through a fine farming district, the soil being principally clay or clay loam with a few spruce swamps, all of the land has been taken up by settlers, most of whom have good buildings erected. One mile west of Fort Frances commences a swamp running along the trunk road a distance of two miles. This is the only large swamp passed over until within three and a half miles of Emo where the road again crosses a swamp for two miles. In both of these swamps there is good drainage.

The timber is small, practically all suitable for lumber having been cut or burnt off by the fires which have overrun the country. The timber found is mainly spruce, tamarac, poplar, birch and balm of gilead.

The Banks of the Rainy River between Emo and Barwick.

The next section of the trunk road is between Emo and the town of Rainy River, a distance of thirty-eight miles, described as follows:

Commencing at the Village of Emo, thence north-westerly to the east boundary of section 36 in the Township of Barwick, one mile; thence westerly along an old colonization road to east boundary of Indian Reserve number 11, one mile and 14 chains, thence almost in a direct line across the Indian Reserve through a beautiful farming country badly burnt over in places, a distance of three and a quarter miles to west boundary of said Indian Reserve, then N. 77, 20 W. 33.36 chains, then N. 65 49 W. 6.39 chains thence westerly along north boundary of river lot 38 31.09 chains thence westerly along the north boundary of section 31 Township of Barwick, one mile to Barwick Station on the Canadian Northern Railway and close to the village of Barwick, thence continuing westerly along south boundary of sections 1 and 2, Township of Shenston 2 miles, thence north

along east boundary of section 3, 2,871 feet to the southern limit of said railway, thence westerly along said railway 5 miles and 426 feet across Indian Reserves 12 and 13. Both these Indian Reserves have been almost entirely swept by the forest fire of 1897. The greater portion of Number 12 and the eastern and southern portions of number 13 is fine agricultural land. In the western portion there is a large muskeg which will require considerable draining. After crossing the Indian Reserve, the road then follows along the northern boundary of sections 12 and 11, township of Morley for one mile, 1,498 feet; thence northerly along east boundary of sections 15 and 22, 2 miles, passing through the town of Stratton and crossing the Canadian Northern Railway to the north side, half a mile north of the south-east angle of section 15. The road then turns west for five miles along the north boundary of sections 22, 21, 20, 19 and 18, thence

Surfacing a Semi-Muskeg Road with Gravel. Part of the Little Grassy River Road, Rainy River Valley.

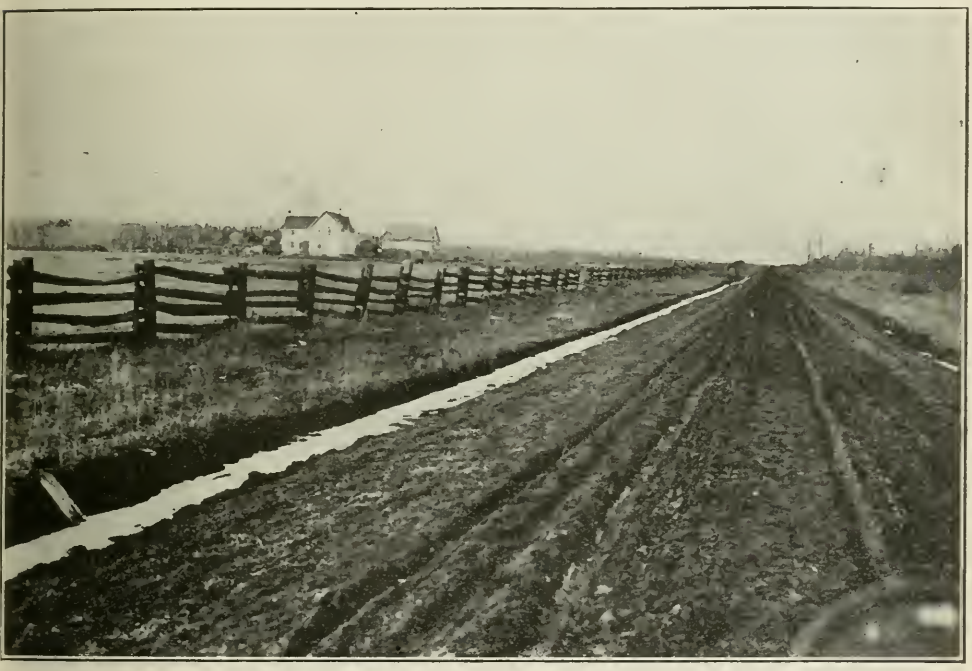
northerly 2,600 feet along east boundary of section 26, Township of Dilke thence westerly along old colonization road 5 miles, passing through the village of Pinewood; thence northerly 2,600 feet along east boundary of section 36, township of Worthington, thence westerly along the north boundary of the townships of Worthington and Atwood a distance of 9 miles to the town of Rainy River.

Along this road 16 miles of new road were cut out, 13 miles of which were graded, leaving 3 miles of new road to be graded next season, also 5 miles of old road should be graded next season before being gravelled. Sixty-two culverts and seven pile bridges were built, two and a quarter miles of tap drain were dug and seven miles of the road gravelled. Twenty-five miles of this road should

be gravelled to give a continuous gravelled road from Emo to Rainy River. The most of this gravel will have to be hauled by train as there are only a few good gravel pits close to this road. Twenty-five miles of this road was graded and three and a half miles cleared ready for grading, during the present season.

This road runs through a fine belt of clay land from Emo to Stratton. Between Stratton and Rainy River the road crosses six miles of swampy land, the remaining thirteen miles being good clay land. The high land has all been taken up and considerable of it cultivated.

Between Barwick and Stratton the road is all graded two miles of which were gravelled, the remainder being ready for gravelling. Between Stratton and Pinewood there remains one and one-half miles of new road to be ditched and two miles of old road to be graded before this road is ready for gravelling.



On the Fort Frances and Rainy River Trunk Road, near Stratton, before surfacing with gravel.

Between Pinewood and Sleeman there remains one and one-half miles of new road to be graded. Two and a half miles of gravelling will complete this road. Between Sleeman and Rainy River two miles of old road should be graded and four miles gravelled.

Road from Sleeman to Little Grassy River.

This road has a total length of sixteen and three-quarter miles, described as follows:

Commencing at the trunk road at the village of Sleeman thence northerly a distance of seven miles to the north-east corner of section 34 in the township of Blue thence diagonally across lots 5 and 6, Con. 1, township of Pratt to the north-east corner of lot 5, Con. 1, one mile and 1,109 feet, thence north 5 miles between lots 4 and 5 to the north boundary of the township of Pratt, thence

easterly one mile to the north-east corner of lot 3, township of Pratt, thence northerly two miles and 2,491 feet between lots 2 and 3, township of McCrossen to the bridge across the Little Grassy River.

On this road 17 miles of ditches and one mile and 600 feet of tap drain were dug, 32 culverts and two bridges were built, 10 miles of road gravelled and Sleeman's Creek cleaned out for one mile to give a good outlet to the water from the ditches. The road was graded its entire length. Four miles of this road is new road.

For the first twelve miles along this road fifty per cent. of the land is low, beyond the twelve miles the road passes through a fine belt of clay land where previous to the building of this road the settlers only had a winter road to the railway.

The large timber has nearly all been cut, but considerable cedar posts and poles are taken out each winter by the settlers. The principal timber found are the poplar, cedar, birch, tamarac and spruce. Most of these trees are of small size but there still remains a considerable quantity of good cedar and large poplar.

The Fort Frances Water Power on Rainy River, showing the Ontario and Minnesota Power Company's Power Houses and Pulp and Paper Mill on the Ontario side of the river.

Road in the Township of Dilke.

One-half mile of road was graded and gravelled south from the trunk road between river lots 24 and 25. This road was built to enable us to haul gravel to the trunk road. It passes through a good farming district.

North Pinewood Road in the Township of Nelles.

This road is a continuation of the road running north from the village of Pinewood. Commencing at the north-east corner of section 3, township of Nelles, thence north four miles to the north-east corner of section 26, Nelles.

Along the east boundary of section 3 and 10 a single ditch was dug alongside of old road and the excavation spread to grade on the old road bed. On the east

boundary of section 15, eighteen hundred feet of new road, one culvert and a pile bridge 46 feet in length were built. On the east boundary of section 22 one mile of new road was built. On the east boundary of section 27 one mile of single ditch was dug and the road grubbed and cleared. On this mile another ditch should be dug on the opposite side of this road. The total length of this road is 4 miles and it was built with the intention of continuing it to the Big Grassy River country.

Land along this road is mostly swampy; all of the high land has been settled on, and the settlers have been very much handicapped by poor roads. This road will open up a good country to the north if continued. The timber found is small spruce, tamarac, poplar and birch.

A Group of School Children and Teacher in the Rainy River Valley.

Barwick Road North Along Shenston and Dobie Town Line.

Commencing at the south-east corner of the township of Shenston, thence northerly 6 miles along the town line.

This road was graded its entire length. Five culverts and 1,095 feet of tap drain were built. This road passes through an excellent farming district, well settled.

Road on North Boundary of Township of Tait.

Commencing at the north-east corner of section 35, township of Tait, thence westerly along the north boundary of this township, two and one-quarter miles. This road has been cleared and grubbed but not graded.

Road in Township of Shenston.

Commencing at the south-east corner of section 2, township of Shenston, thence northerly a distance of 2,858 feet along east boundary of section 2. This

road was gravelled its entire length and one culvert built. It was made for hauling gravel to the trunk road. It passes through good farming country.

Carpenter and Dobie Town Line.

Commencing at the trunk road on the townline between Barwick and Lash, thence northerly 5 miles along the townline between Barwick and Lash and along the Carpenter and Dobie townline.

Along this road 3,310 feet of tap drain were dug, 17 culverts and one bridge 33 feet in length were built. The road was graded its entire length. This road passes through a good farming district. The soil is clay or clay loam. The land is all taken up and improved.

Crozier and Devlin Town Line.

Commencing at the north-east corner of section 24 in the township of Devlin, thence northerly along the Crozier and Devlin townline one mile and a half.

The road was graded one mile north from the trunk road the remaining half mile being cleared and grubbed ready for grading. Two culverts and 600 feet of tap drain were built.

This is a new road and gives an outlet to a number of settlers who did not have a road before to town. The soil is a heavy clay. All of the land along this road is settled.

Devlin Road, Township of Burriss and Dance.

Commencing on road between lots 8 and 9, township of Burriss 2,400 feet south of the north boundary of Burriss, thence northerly 2,400 feet between said lots, thence northerly two miles between lots 8 and 9 township of Dance. There was also a road built running easterly along the north boundary of lots 8 and 7, Con. 6, Burriss one mile.

Between lots 8 and 9 Burriss, 2,400 feet of old road was grubbed and graded. Between lots 8 and 9 concessions 1 and 2 Dance, a new road was cleared two miles. In Con. 1 three-quarters of a mile of road was graded and the grubbing completed to the end of the mile. Six culverts and 3,080 feet of tap drain were built. Along the north boundary of lots 8 and 7 Burriss one mile of road was cleared 66 feet in width and 1,230 feet of road graded.

This road should be completely graded next season and the road continued north another two miles to give an outlet to the settlers located there.

The land is clay and spruce swamp and is all settled on and partly cleared and cultivated.

La Vallee Road.

Commencing at the Canadian Northern Railway track at the village of La Vallee thence southerly five and a half miles to the old river road thence easterly along said road a distance of three miles.

Six miles of this road was practically new road the remainder being old road which we regraded. This road has been graded its entire length, but the new road should be gone over next season with the grader to smooth it down as the grade was wet when built and it was impossible then to make a smooth road. 22 culverts and 9,700 feet of tap drain were built on this road.

This road passes through a fine belt of clay land and is all settled and considerable of it under cultivation. The timber found is small being chiefly spruce, tamarac, birch and poplar.

Crozier Road.

Commencing at the trunk road on the east boundary of section 20, township of Crozier, thence south 1,000 feet to the Canadian Northern Railway.

This road was graded, one culvert repaired. and 300 feet of tap drain dug.

Road in Township of Crozier.

Commencing at the trunk road at the north-east corner of section 21, township of Crozier thence one mile easterly on the north boundary of section 22.

This road was cleared the full width of 66 feet. The country is swampy; the first quarter of a mile is good clay land.

ROADS CONSTRUCTED IN THE PORT ARTHUR DISTRICT, TRIBUTARY TO THE CITIES OF PORT ARTHUR AND FORT WILLIAM, DURING THE SEASON OF 1913.

Amount expended, $123,247.31.
Number of miles of road cut out and old roads improved and graded, 107.

The following roads were cut out, improved and graded during the season of 1913:

Dawson Road.

Commencing at the north-westerly limit of the city of Port Arthur thence north-westerly 18 miles to the crossing by the Grand Trunk Pacific and the Canadian Pacific Railways near the Kaministiquia River.

Dog Lake Road.

Commencing at a point on the Dawson Road about four miles west of the limit of the city of Port Arthur, thence northerly toward Dog Lake. Work was completed on this road four miles.

John Street Road.

Commencing at the westerly limit of Port Arthur, thence west to the Kaministiquia River a distance of 14½ miles. The last half mile of this road was not completed as the crossing point on the Kaministiquia River has not yet been decided upon.

Oliver Road.

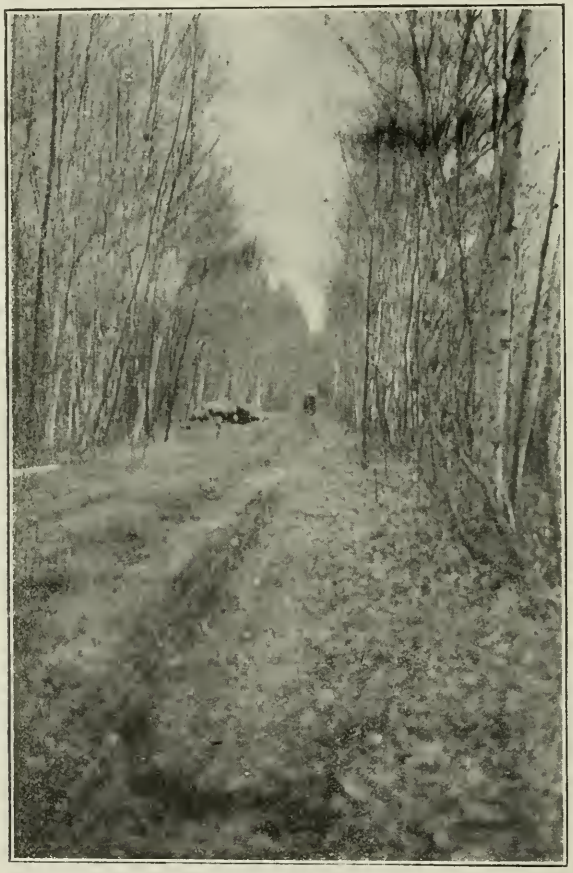
Commencing on the westerly limit of Port Arthur thence west 17 miles to the Kakabeka Falls, together with a diversion of 1½ miles to the dam across the same river.

Oliver and McIntyre Township Road.

Commencing at the Oliver Road and extending north between townships of Oliver and McIntyre 6 miles.

Arthur Street Road.

Commencing at the west limit of the city of Fort William thence west to Kakabeka Falls, together with a branch road running south-westerly crossing the Kaministiquia River at the village of Stanley and proceeding south-westerly along the White Fish River Valley to Hymers, a distance of 21 miles in all. The work performed consisted in widening, clearing, grading and placing culverts.



On the Old Dawson Road, ten miles west of Port Arthur, showing 40 years' growth of White Birch.

Pigeon River Road.

Commencing at the southerly limit of Fort William, thence south-westerly to and following the Slate River Valley, passing the front of the Prison Farm and southerly towards the International Boundary, at a point on the Pigeon River where a trunk road now being constructed in the State of Minnesota will also end. The work was performed on this road for a distance of 20 miles.

Scoble and Pearson Road.

Commencing at a point on the Pigeon River road where the latter turns south from the north limit of the township of Blake, thence west along the north limit of that township and south along the west limit of the said township, to a trunk road constructed by the municipality of Pearson township, and beginning again at a point on said trunk road where the line between lots 6 and 7 intersects it; thence south 2 miles; thence west 1 mile to another trunk road similarly constructed. Work was performed on these roads for a total distance of 6 miles.

On all the old roads improved, the stumps, etc., were cleared away and burned for a width of 66 feet, all boulders and stones, stumps and roots were removed from the central 40 feet. culverts of corrugated iron, stone or durable

The Fort William and Duluth Trunk Road passing the Provincial Government's Prison Farm, south-west of Fort William.

wood were built at all stream or water course crossings. The steep pitches and grades were modified by excavation. All low-lying portions of the roadway were built up by borrowing earth from the sides or from adjacent high ground. A roadway 28 feet in width having well constructed ditches on each margin was formed having a crown of 2 feet at its centre above the ditches. Graders hauled by horses and a large grader hauled by a traction engine were used in the work.

The old roads were often merely a waggon width track, closely hemmed in, in places by trees and undergrowth, with many roots, stumps and boulders in the roadways. They followed along the road allowances, but were very crooked and little or no work had been done to modify the steep pitches at stream crossings and hills. Drainage was insufficient, and in many instances the old ditches were so close to the travelled portion of the road that it was dangerous for vehicles to pass. These roads had to be widened, the old ditches filled in and new ones constructed. Gravel suitable for road purposes was difficult to procure.

Dawson Road.

The work was begun at the west limit of the city of Port Arthur. The road was cleared to the full width of 66 feet for the first ten miles then 40 feet in width the remaining 7½ miles to the Canadian Pacific Railway near the Kaministiquia River. All stumps, stones and debris were cleared from off the central 40 feet of the right of way. Wooden, stone and four corrugated iron culverts were built in place. The grading was completed for 11½ miles.

Oliver Road.

Cleared 66 feet in width for 17 miles to the falls, also a branch running to the dam site on the Kaministiquia River about 1½ miles. Stones, stumps, etc., removed from the central 40 feet. Wooden, stone and 45 corrugated iron culverts built in place. The grading and ditching completed for 18 miles.

Oliver and McIntyre Town Line.

Cleared 66 feet in width for 6 miles, and stones, stumps, etc., removed from the central 40 ft. Wooden and stone culverts built in place. Grading begun at John Street and completed south one mile, also begun at Dawson Road and completed south 2 miles. All ditching completed. Part of this road still requires to be graded.

Arthur Street Road.

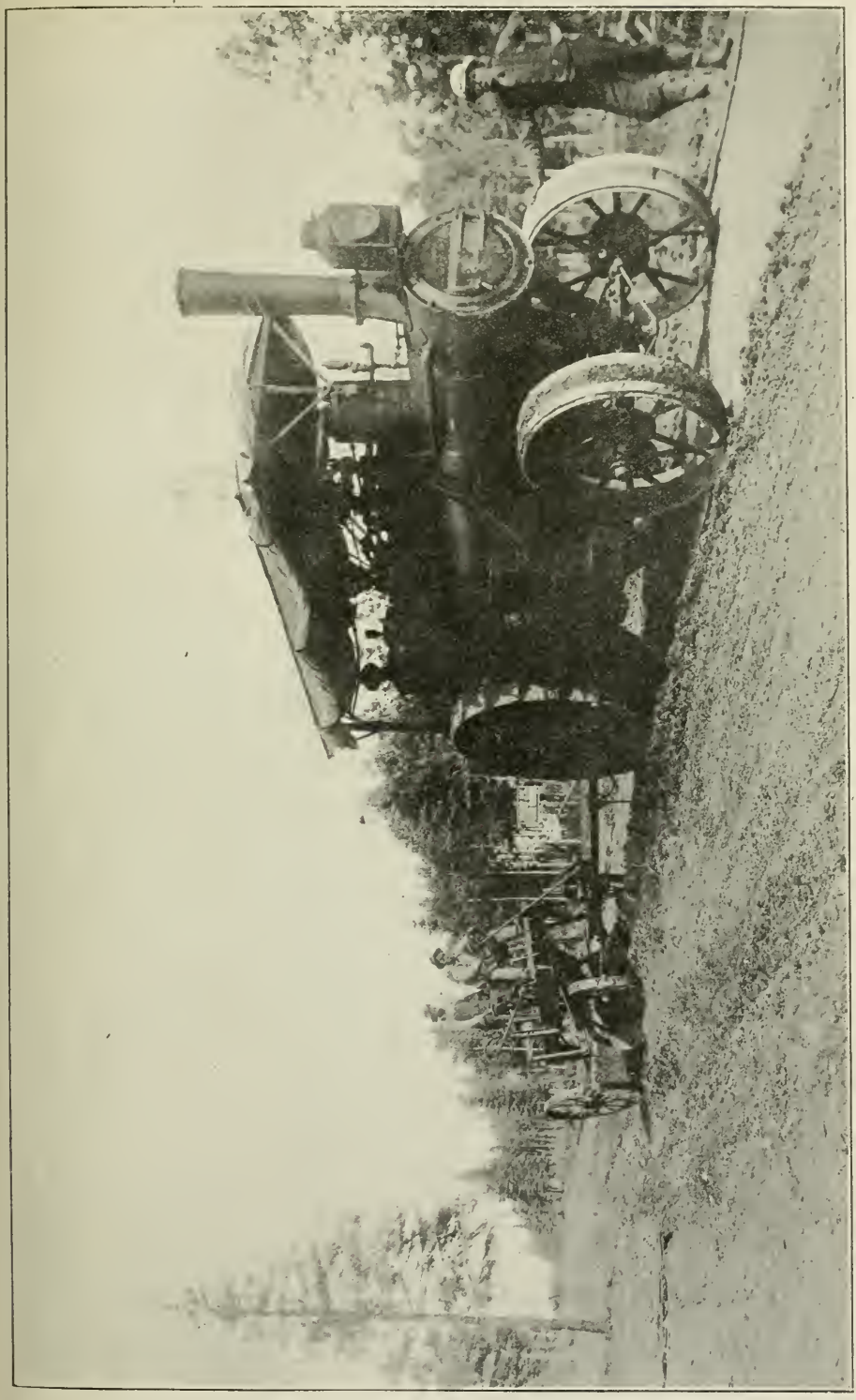
Cleared 66 feet in width for 21 miles: stones, stumps, etc., removed from the central 40 feet, and wooden, stone and 18 corrugated iron culverts built in place. Grading completed to Kakabeka Falls and on the branch road across the Kaministiquia River at Stanley and south-westerly 2½ miles. 18½ miles of grading done. The entire road well ditched. A diversion of 2½ miles long from the former road south-west of Stanley was begun where grading ceased. This 2½ miles was cleared out, stumped, etc., and made fit for a winter road. The diversion was made in order to avoid a steep hill on the old road. This joins the former road again and follows the same for about 1½ miles. There a further diversion required to be made to a point on the former road near Hymers, thence it should run through the township of O'Connor.

Pigeon River Road.

Cleared 66 feet in width for 20 miles, stones, stumps, etc., removed from the central 40 feet. Wooden, stone and 96 corrugated iron culverts built in place. Grading completed for 14 miles with the exception of 2 hill cuttings and one fill to be completed. Ditching completed for 14 miles. This road may be extended to the International boundary to connect with the state road from Duluth to the Pigeon River, which is now partially completed from Duluth to within a mile or two of the river.

Scoble and Pearson Road.

Cleared 66 feet in width for 4 miles, stones, stumps, etc., removed from the central 40 feet, and stone and 41 corrugated iron culverts built in place. Grading completed for 4 miles with the exception of a fill 300 feet in length which has been cross-laid. This part of the road lies on the town line between



Grading on the Oliver Road, west of Port Arthur.

the township of Blake and Paipoonge one mile, and between the townships of Blake and Scoble three miles, connecting at its southerly end with a trunk road already constructed by the township of Pearson. Road between lots 6 and 7 township of Pearson cleared 66 feet in width for two miles, stones, stumps, etc., removed from central 40 feet. Wooden culverts and bridge over the Slate River built. Road made fit for winter travel. This part of the road begins at the above mentioned trunk road and runs south 2 miles thence west 1 mile to join a second trunk road constructed by the municipality. This road may be extended south along the line between lots 6 and 7 to join the Port Arthur Duluth International road.

Dog Lake Road.

Work begun late in season, at Dawson road. Cleared 40 feet in width for 4 miles. Stones, stumps, etc., removed from central 25 feet of clearing for 4 miles. Wooden and stone culverts built in place for 3½ miles. Grading and ditching completed for 2½ miles. At a point about 2½ miles from the Dawson Road a diversion of the former road was begun and was laid out for 2½ miles when it again joined the former road. This was cleared and stumped and made fit for a winter road but was not graded nor completely ditched.

John Street Road.

Cleared 66 feet in width for 13½ miles. Stones, stumps, etc., removed from central 40 feet of the clearing. Wooden, stone and 9 corrugated iron culverts built in place. Grading and ditching completed for 11½ miles. Total length of road to the Kaministiquia River is about 14½ miles. The last mile of which should not be built until such time as the crossing point of the river has been decided upon, the road to be diverted to meet that.

Along the Dawson Road which was cut out as far back as 1870 the land is nearly all settled on and in places large clearings have been made. In other places, however, many poorly-cultivated farms are to be seen or land held by land speculators. In other places, owing to the rough and broken character of the country, only small clearings or garden patches are under cultivation. This class of land is to be found towards the Kaministiquia River. The land in many places is light, gravelly and stony. There are a good many Finlanders located along the road who appear to be making good progress, although on rough, broken land.

The same remarks will apply to the character of the land along the Dog Lake Road; good land in small patches here and there, but speaking generally, the country is rough and broken.

Along the John Street Road, Oliver Road and Arthur Street Road there are large areas of first class farming land under good cultivation. These lands have been settled on in places for many years.

Going south-west of Port Arthur in the Slate River Valley, you enter a fine farming country, under first class cultivation. Settlement as a whole will compare favorably with some of the best settlements in older Ontario. As you proceed south on the Pigeon River Road through the township of Blake and Crookes, the country becomes more broken and high mountains are passed, but in the valleys, however, the soil is first class, and after the completion of the road, it will all be occupied, as Fort William and Port Arthur offer splendid markets for all kinds of vegetables.

The same remarks will apply to the country on the Pearson and Scoble Roads.

ROADS IN THE DISTRICT OF KENORA, IN THE VICINITY OF THE TOWNS OF KENORA AND KEEWATIN.

Number of miles of roads constructed or improved, 23½.
(Of which 4 miles were macadamized and 15 graded, and the balance, 4½ miles, cut out.)
Amount expended during the season of 1913, $95,533.58.

Operations on the Kenora and Keewatin roads began early in May at the east branch of the Winnipeg River on the old road between the town of Kenora and the village of Keewatin, which road passes through the village of Norman. At a point on this road about half a mile east of the village of Keewatin a trunk road was constructed running north west, crossing Darlington Bay of the Lake of the Woods over the bridge constructed by the Colonization Road Branch of the Public Works Department in 1912. The road continues north-westerly, passing the north end of Middle Lake in the Township of Pellatt, thence continues in a westerly direction across the fourth concession of said township, crossing the west boundary of Pellatt about a quarter of a mile north of the southwest angle of Lot 16, Concession 5. The road then continues westerly and north-westerly for a distance of about 3¾ miles, passing along the east shore of Beulah Lake until it reaches the eastern end of Pelican Pouch Lake, where operations ceased; at a point about sixteen miles south-west of Malachi station on the Grand Trunk Pacific Railway and about the same distance east of the Manitoba boundary.

Besides this, a road was graded from Ignace Station to Osaquan Station on said railway, a distance of five miles. Beginning at Ignace, the first two miles of this road were through a muskeg, which had to be ditched and surfaced with cinders from the Canadian Pacific Railway round-house, to a depth of from eight to ten inches. Several culverts were put in and off-take ditches dug. The balance of the road was all cut out, stumped, and grading done where required. Several bad hills were cut down and graded, and 1,000 yards of corduroy laid, and covered with clay and gravel. Four small bridges were built of the following lengths, 100 feet, 6 feet, 15 feet and 40 feet. The traffic over this road is in connection with a stone quarry and a sawmill at Osaquan.

Besides the above road, one mile of road was cut out and fairly well graded at Minaki Station on the Grand Trunk Pacific Railway where it crosses the Winnipeg River, namely, Winnipeg Avenue and part of Front Street, Kenora Street and North Street. These roads connect Gun and Sandy Lakes with the Grand Trunk Pacific Railway Station. At the foot of Winnipeg Avenue on Sandy Lake, a dock eighty feet in length by sixteen feet in width was constructed.

Minaki is a town site laid out by the Department of Lands, Forests and Mines three years ago. Part of it has been disposed of, and it has now become a very prominent summer resort for the citizens of Winnipeg. Already the Grand Trunk Pacific Railway Company have commenced the construction of a large tourist hotel. Islands are numerous in the two lakes to the north and south of the railway, Sandy and Gun, and compare favorably with those of the Lake of the Woods.

The road as constructed between Kenora and Keewatin follows as closely as it was practicable to construct, the old road along the Canadian Pacific Railway, constructed nearly twenty years ago. The old road passed over a rough, broken and hilly country. From the east branch of the Winnipeg River west, very little work had been done on the road. No attempt had been made to cut down the grades or drain the low places. It was the most difficult and expensive piece of work I had

to construct this season, as rocky hills and steep pitches had to be cut down and the low places built up with rock. No gravel was available in the district and rock had to be crushed to surface the road with. The old road followed close to the bank of the Winnipeg River in places, or close to the right of way of the railway, where it was dangerous for teams to pass. Over 7,000 cubic yards of crushed rock was required on this road. The rock excavated from the hills was used in the road bed in the valleys.

The road between the two towns is now completed and will compare favorably with the best macadamized roads in any part of Northern Ontario. The distance from the east branch of the Winnipeg River on the Keewatin branch is 2 6-10 miles. At a point on this road about half a mile east of the Keewatin bridge, the trunk road branches to the north-west, crossing Darlington Bay on the long wooden bridge constructed last season by the Colonization Road Department. This bridge is over 600 ft. in length built on piles. From the Kenora and Keewatin Road to the bridge, a good portion of the road had to be built up with stone and surfaced with gravel, and crushed rock. North of the bridge through the Township of Pellatt the country was found very broken. The road winds through the valleys. In the rocky parts, road material, even soil was difficult to procure and had to be drawn a considerable distance. In other places, where the road passed through sections of good farming land, it was possible to use the grader. The road in places follows a Colonization Road cut out two years ago. This road was straightened and where practicable was changed in order to improve the grades. There is now a well graded road for a distance of nearly nine miles beyond the Darlington Bay bridge. There still remains 5½ miles of this road to be graded.

The country to the north and north-west of the towns of Kenora and Keewatin, through which the above road passes and extending west to the Manitoba boundary, and north to the Grand Trunk Pacific Railway, is generally rugged, hilly and rocky, and in part mountainous. Not more than one-fifth of it can ever be considered as fit for cultivation of any kind. The arable land occurs in small tracts varying from a few acres up to a hundred acres, but seldom exceeding a few thousand acres in extent; comprising nowhere any important or extensive field for colonization.

The country has at different times, in places, been swept by forest fires. There still remain, however, very considerable areas of Jack Pine, Spruce and Tamarac with scattering groves of Red and White Pine. Where the land is free from stone or rock, and except in the Jack Pine plains where the soil is very sandy and gravelly, the soil is a rich clay or clay loam: and vegetables, and all kinds of grain are being produced, and as there are good markets at the towns of Kenora and Keewatin, farming where carried on is very profitable. Heretofore the settler was seldom able to reach these markets except in the winter season when sleighing was good. With the road as now constructed, it will be possible for him to reach a market at all seasons of the year. Later on, this road, which is now within sixteen miles of the Grand Trunk Pacific Railway, might be extended, as all along the route, small scattered areas of fairly good land are met with. The road might also be extended west to the Manitoba boundary, a distance of about sixteen miles, if it is ever found practicable for the Manitoba Government to construct a trunk road east from Winnipeg north of the Canadian Pacific Railway to the Lake of the Woods, one of the finest tourist resorts in the west.

DESCRIPTION OF TRUNK ROAD CONSTRUCTED BETWEEN TOWNS OF NORTH BAY AND MATTAWA, DISTRICT OF NIPISSING, DURING SEASON OF 1913.

Number of miles of road constructed and graded	48
Number of corrugated iron culverts placed	36
Number of miles of road resurfaced with gravel	20
Amount expended	$83,313.38

This road commences at the Town of North Bay where Kennedy Avenue intersects the boundary between the Townships of Widdifield and Ferris; thence southerly along Kennedy Avenue and the southerly production thereof, close to the shore of Lake Nipissing to line between Concessions 14 and 15 of the Township of Ferris; thence in an easterly direction across Concession 14 to near the Grand Trunk Railway; thence southerly along the west side of the Grand Trunk Railway to the Village of Callander in the Township of Himsworth, a distance of seven and one-half miles; thence easterly between the 8th and 9th Concessions to the Township of Himsworth and Ferris to the side line between Lots 9 and 10, Ferris; thence southerly across the 8th and 7th Concessions of the said last mentioned township, to the road between Concessions 6 and 7; thence easterly across Lots 9 to 5 inclusive, crossing Canadian Pacific Railway on Lot 5; thence southerly and south-easterly along the north shore of Nasbonsing Lake, north of the right of way of the Canadian Pacific Railway, passing through Nasbonsing Station, and entering the Township of Bonfield, and crossing to the south of the Canadian Pacific Railway at the outlet of Nasbonsing Lake into the Town of Bonfield: thence northerly through said town to the line between Concessions 8 and 9, township of Bonfield; thence continuing easterly along said Concession line across Lots 10 to 32, inclusive; thence southerly between Lots 32 and 33, across Concessions 8 and 7, Township of Bonfield; thence easterly between Concessions 6 and 7, across Lots 33, 34 and 35, to the townline between Bonfield and Calvin; thence southerly along said townline across Concessions 8, 7 and 6, Township of Calvin: thence east between Concessions 5 and 6, in the said last named township, across Lots 36 to 33 inclusive; thence southerly between Lots 33 and 32, across Concession 5: thence easterly between Concessions 4 and 5, across Lots 32 to 1, inclusive, to the Township of Papineau; thence easterly crossing the right of way of the Canadian Pacific Railway on Lot 33, Concession 13, near Calvin Station: thence continuing in a north-easterly direction across the 13th and 14th Concessions of the said Township of Papineau to the line between Concessions 14 and 15 on Lot 22, north of Earl's Lake; thence continuing easterly along the line between Concessions 14 and 15 across Lots 22 and 21, and still continuing in an easterly direction across the 14th Concession, to the side road between Lots 15 and 16, where the road passes close to the right of way of the Canadian Pacific Railway; thence continuing easterly along the north side of the said railway to Mattawa Station, on the said railway, a distance of forty-eight miles.

Construction work on this road was begun early in May, 1913, from both ends. Commenceing at Mattawa, the road followed the old travelled colonization road, built many years ago, first for lumbering purposes and later on improved in places by the Public Works Department for colonization purposes. This road passes through a portion of the Township of Papineau, in which there is little or no agricultural land. The country is almost one continuous bed of boulders, small and large, with coarse gravel. The old road was in most places not more than 8 or 10 feet wide and in many places only the width of a waggon. I removed all the boulders from off the road for a width of from 18 to 22 feet and dug sufficient

ditches to carry off the surface water, and graded the road, cutting down all the bad hills and steep pitches and straightened the road from point to point. As good gravel was to be found in great quantities close to the road, the entire road was gravelled for a width of from 12 to 16 feet and to a depth of from 5 to 8 inches. Good stone culverts were placed wherever required.

As we entered the Township of Calvin on the east side fairly good agricultural land was met with, although stony in places. The country is all well settled and fair progress is being made. This road crosses the Pautois Creek on Lot 7 and the Amable du Fond River on Lot 21. There is a good concrete bridge across Pautois Creek but the bridge across the Amable du Fond River is a wooden one and has been in use for ten or more years and will shortly require to be removed. The covering is badly rotted and I re-planked it, and it will now last for a few years. The bridge is 120 feet in length. It is built on piers filled with rock. The piers are badly decayed and at present it would be unsafe to take heavy machinery over it. On Lot 26 a small bridge was constructed with two corrugated iron culverts 58 inches in diameter. The country along the road through the Township of Calvin is high and rolling. Large stone culverts were constructed where necessary and the road well graded and ditched. Several corrugated iron culverts were placed where stone could not be had conveniently. About three miles of the road was gravelled in places where it was most required. The road throughout this township is now in first class condition, from 18 to 22 feet in width. The low places were all built up with stone and the heavy grades cut down.

Entering the Township of Bonfield on the east, the land still continues good. The road crosses the Canadian Pacific Railway at the north-east angle of Lot 32, Concession 8, at the Village of Rutherglen to the north side, and again re-crosses to the south side on the same lot. On Lot 31 it crosses Spark's Creek where a concrete bridge was constructed by the Department of Public Works. Large corrugated iron culverts were used for the bridge on the creek crossing Lot 24, on the line between Concessions 8 and 9. Several small muskegs were crossed and these had to be filled in with stone and well drained. Numerous rocky hills were crossed and considerable rock cutting had to be done in order to make the grades passable. The country approaching Bonfield Station was exceptionally broken and required a great deal of work to make the road in good condition. On this part of the road corrugated iron culverts were placed on all the small streams. In the Town of Bonfield, across the Kabaskong River, a steel bridge with concrete abutments was constructed a year ago by the Public Works Department. The western approach to the bridge at the crossing of the Canadian Pacific Railway had not been filled in. Since October 31st I completed this part of the work, filling in over 1,500 cubic yards of rock.

After crossing the Kabaskong River, the road continues along the north side of the Canadian Pacific Railway, and at a distance of 2½ miles the Township of Ferris is entered, the road still continuing from a chain to a quarter of a mile from the right of way of the Canadian Pacific Railway, passing close to Nasbonsing Station on Lot 3, Concession 3, Ferris. The country still continues rocky and rolling although there is a fair percentage of fairly good agricultural land in places. The road crosses the Canadian Pacific Railway on the line between Concessions 6 and 7, on Lot 5, and follows the Concession road allowances and side road allowances throughout to the Village of Callander. From this crossing to Callander, forty stone and wooden culverts were constructed across the numerous small streams and runways. Throughout this entire township the country is

broken and rocky, although several first-class farms along the road were passed. Large numbers of boulders had to be drawn off the road and rocky ridges cut down. The road is now well graded and ditched although very little gravel was available, and later on it will be necessary to put gravel on the lower portions.

About three-quarters of a mile east of Callander the road crosses the Canadian Northern Railway and at Callander it crosses the Grand Trunk Railway to the west side and then continues northerly paralleling the railway until it reaches a point about a quarter of a mile south of Nipissing Junction, at the crossing of the Canadian Pacific Railway. Up to this point from Mattawa the road follows as nearly as possible the old road. It enters the Township of Himsworth half a mile east of Callander and continues across Concessions 27 and 28, Himsworth, when it again enters the Township of Ferris between Lots 31 and 32, and from that point it continues through the Township of Ferris until it crosses the boundary between Ferris and Widdifield on Lot 40, Concession 18. From near Nipissing Junction the new road was cut out, the old road being found almost impracticable owing to the rocky country passed through. The new road, as cut out, had no bad grades and passes through a country which has a fair percentage of agricultural land in it. It passes close to the shore of Lake Nipissing, passing close to a large number of summer resorts. From Nipissing Junction to North Bay the country is very level in places, the soil being light, sandy loam. No gravel was available and after the road had been well graded and ditched it was found necessary to crush rock so as to macadamize about four miles of it. This work was begun early in January when it was found cheapest to crush and haul rock. Between North Bay and Callander twenty first-class stone and wooden culverts were constructed and three wooden bridges.

This road was all constructed by day labor. The grader was used where it was found practicable but that covered only a very small portion of the entire road.

Eighty-three thousand three hundred and thirteen dollars and thirty-eight cents was expended on this road.

When the road between North Bay and Callander is stoned and the low places between Callander and Bonfield gravelled and a new bridge constructed across the Amable du Fond River, this road will be quite passable for automobiles or motor trucks. At present, the distance of forty-eight miles can be made in three hours.

ROADS IN THE DISTRICT OF SUDBURY.

Number of miles constructed and old roads improved, 72½.
(Of which 10 miles have been macadamized and 50 miles graded, 12½ miles cut out and partly graded.)
Amount expended, $118,568.32.

Work on the Sudbury roads was commenced on or about the 1st of May, 1913, between the Town of Sudbury and the Murray mine which is distant 3½ miles west of Sudbury. A road had been constructed between these two points by the Colonization Road Branch some years ago. It passed through a very rocky and broken country, interspersed with several small muskegs which were difficult to drain. There was a good deal of traffic passing over this road between Murray mine and Sudbury, and also that of all the settlers in the Chelmsford Valley for twenty miles west, as far as Onaping on the west and north-west, Vermilion Lake on the south and Vermilion River on the north. It was therefore considered

necessary to construct a trunk road sufficient for the heavy traffic and farm produce that would be taken over it. The road was constructed as near as practicable to the stations along the Canadian Pacific Railway, through the Village at Murray mine, Azilda, as close to the Village of Chelmsford as possible, through the Village of Larchwood and west to Phelan.

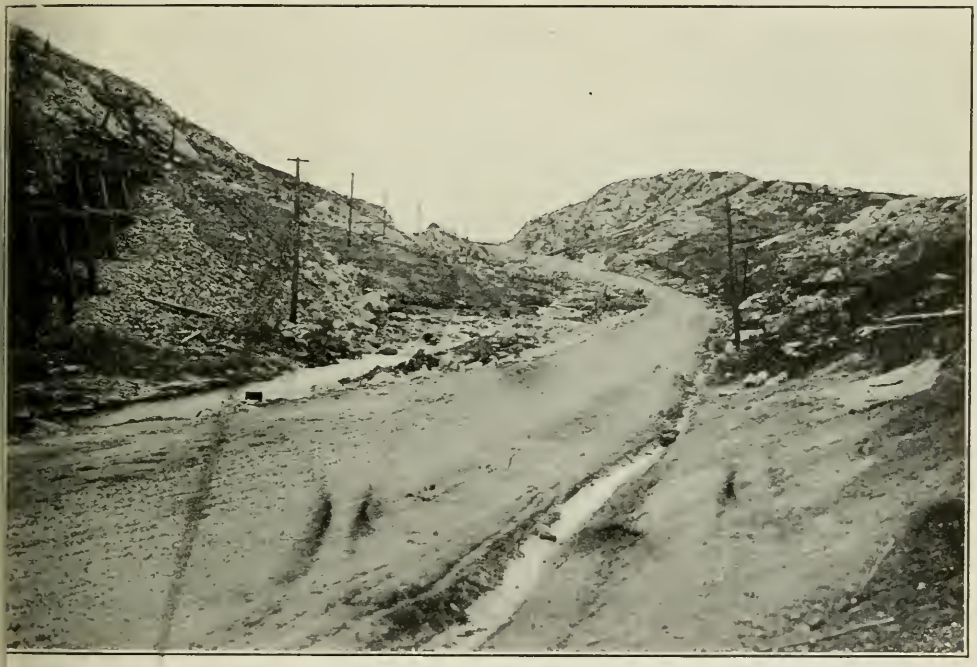
Between Sudbury and a point a mile west of Murray Mine, the country is a series of rocky ridges and small muskegs. On the old road little had been done to modify the grades, and it was found necessary to do a great deal of rock cutting and filling in of the hollows in order to make a grade that was in keeping with the amount of traffic which would pass over the road. No gravel was available along the road.

The Sudbury and Murray Mine Stone Road.

A stone crusher was put to work along the road, also crushed rock was brought in by train from the Moose Mountain Mine, north of Sudbury. It required 5,000 tons of crushed rock to surface the road to a point about a mile beyond Murray Mine. Beyond this point the road passed through a section of country less broken, as far as Azilda Station on Lot 4, Concession 1, Township of Rayside, where the Chelmsford Valley, a large section of good agricultural country, is entered. The road then continues west and north-west within 5 to 15 chains of the right of way of the Canadian Pacific Railway to the line between Concessions 2 and 3, Lot 8, Rayside, thence west along said concession line across Lots 8, 9, 10 and 11, to the townline between the Townships of Rayside and Balfour; thence north 15 chains to the line between Concessions 2 and 3 of said Township of Balfour, thence west along the line between said Concessions to line between Lots 10 and 11, 5 miles; thence north and north-west crossing the Canadian Pacific Railway near the line between Lots 11 and 12; thence westerly

north of the right of way of said railway, crossing the Vermilion River and passing through the Village of Larchwood on the townline between the Townships of Balfour and Dowling; and still continuing westerly to the line between Concessions 3 and 4, Township of Dowling, thence west along said Concession line, across Lots 2, 3, and 4, thence south between Lots 4 and 5 to the Canadian Pacific Railway, in all a distance of 21 miles from Sudbury.

From Azilda west and north, the land is in most instances clay or clay loam, and in places sandy loam, fairly level, with that class of land extending for miles to the north and south of the road. A large portion of the country is cleared and under cultivation. All the good agricultural land has been settled upon, and fair sized clearings made. In many instances large clearings, with first-class buildings, are met with throughout this valley.



Sudbury and Murray Mine Stone Road passing under the Algoma Eastern Railway.

Azilda Trunk Road:

From a point on the Sudbury and Murray Mine Road half a mile east of Azilda Station, a road was constructed north into the Blezard Valley between Lots 2 and 3, Township of Rayside, across Concessions 1 to 5, inclusive, a distance of 4¾ miles, to the line between Concessions 5 and 6, Township of Rayside: thence west between the said Concessions one mile, and east four miles to the line between Lots 7 and 8, Township of Blezard. This road was well ditched and graded. It passes through a first-class agricultural country; and gives to the settlers a good outlet to the markets at Murray Mine, Copper Cliff or Sudbury. It was intended to have extended this road further north for four miles to the Vermilion River, as the country still continues good and well settled. But owing to the lateness of the season, it was found impossible to continue the work.

From a point on the Sudbury and Murray Mine trunk road about one mile west of Murray Mine towards Larchwood on the trunk road, part of the road should be surfaced with stone or gravel. In places the soil is a heavy clay, and in the wet seasons it will be difficult for heavy traffic to pass over it. The road, however, has been well ditched and graded, the grades modified, the road widened and good substantial culverts constructed where required.

Sudbury and Blezard Valley Trunk Road:

From a point about two miles north of Sudbury, a trunk road was constructed northerly into the Blezard Valley, which is a continuation of the Chelmsford Valley above mentioned. The work began on the line between Lots 4 and 5, Concession

Sudbury, Murray Mines and Chelmsford Stone Road, between Sudbury and Murray Mines.

6, McKim, and continued northerly, passing the Stobie Mine, Mount Nickel Mine and Blezard Mine. For the first six miles, the road passes through a country which is broken in places, with rocky ridges which required a good deal of rock cutting and filling to improve the grades. Beyond that point, a fine agricultural country is entered. The road was completed for a distance of 9½ miles, terminating on the line between Concessions 1 and 2, between Lots 6 and 7, Township of Hanmer. Numerous culverts and small bridges had to be renewed on this road and deep drains constructed. The road is now in first class condition, but owing to the large amount of traffic which will pass over it from the settlement in the Valley, parts of it require to be surfaced with gravel or rock.

Froud Mine Road:

From a point on the Sudbury and Blezard Valley trunk road about two miles north of the Town of Sudbury, a road to the Froud Mine having a length of 1½

miles was constructed. This road passes through a rough, rocky section; the rocky hills had to be cut down and the valleys filled; it was also found necessary, owing to the great amount of traffic that passes over this road, to re-surface it with stone. Rock was crushed near the Froud Mine and placed on the road. It is now a first class macadam road, well drained.

Garson Mine Trunk Road.

Commencing at a point on the Sudbury and Brezard Valley Trunk Road, about two miles north of the town of Sudbury and extending to the Garson Mine in the township of Garson, through the townships of McKim, Neelon and Garson (distant 8½ miles) 4¼ miles of old road were regraded and ditched, and ½ mile macadamized and 4¼ miles of new road was graded and macadamized. The new road passes through a light sandy country, where it was found impassable

Bridge, 325 ft. long, over the Opickinimika River, Mile 13, West Shining Tree Road.

for heavy traffic without resurfacing with stone. Crushed rock was secured at the Moose Mountain Mine on the Canadian Northern Railway, and landed at the point on the road where it crosses the railway, at a cost of 75c. per ton; also rock from the waste dumps at the Garson Mine, where no charge was made. Over 5,000 tons of rock was used on this road. The balance of the road was high, and is now well graded and ditched. Several small bridges were constructed and corrugated iron culverts were placed on the small streams, the westerly five miles of this road passes through a fairly good agricultural country, the latter portion through a light sandy section.

West Shining Tree Mining Road.

Commencing at a point on the Canadian Northern Railway at mileage 78½ north of the town of Sudbury, on the east shore of Duchabaning Lake, thence northerly, passing the north end of Deschenes Lake, and north-easterly through

townships of Garvey, Garibaldi, part of Miramichi and Asquith, to the south-east end of West Shining Tree Lake,, a distance of nineteen miles. This road was cut out 40 feet in width through a virgin forest of jack pine, spruce, white birch and poplar, and a few scattering groves of red and white pine. The road crosses the Opickinimika River about thirteen miles north-east of the railway. The road to this point has been nearly all well graded and cross-layed in places, several culverts have been built, and at the Opickinimika River a first class wooden bridge has been constructed, 325 feet long, built on piers filled with rock. A bridge was also built across the Papoose Creek, about a mile east of Opickinimika, having a length of 196 feet, also one across Temple Creek 50 feet long. This work was done since the 31st October. East of the river the road has been well cut out and well graded and is a first class winter road and suitable for light summer traffic.

The road passes through a country generally rolling with sand or gravel ridges, along which the road followed. Several of the sand ridges had to be cut down but little or no rock was met with on the road. There are very few heavy grades and this road is now in the condition for traffic. The road is almost completed to the gold mines now being operated.

From the end of the road at Shining Tree Lake there is a winter road cut out by the miners so as to enable them to take in supplies during the winter season. This road, however, is not fit for summer traffic.

This road, besides serving the requirements of the mining community, will be a useful road later on when timber operations are being carried on in this district in the future, as it opens up a section of the country in which there was no communication by way of roads.

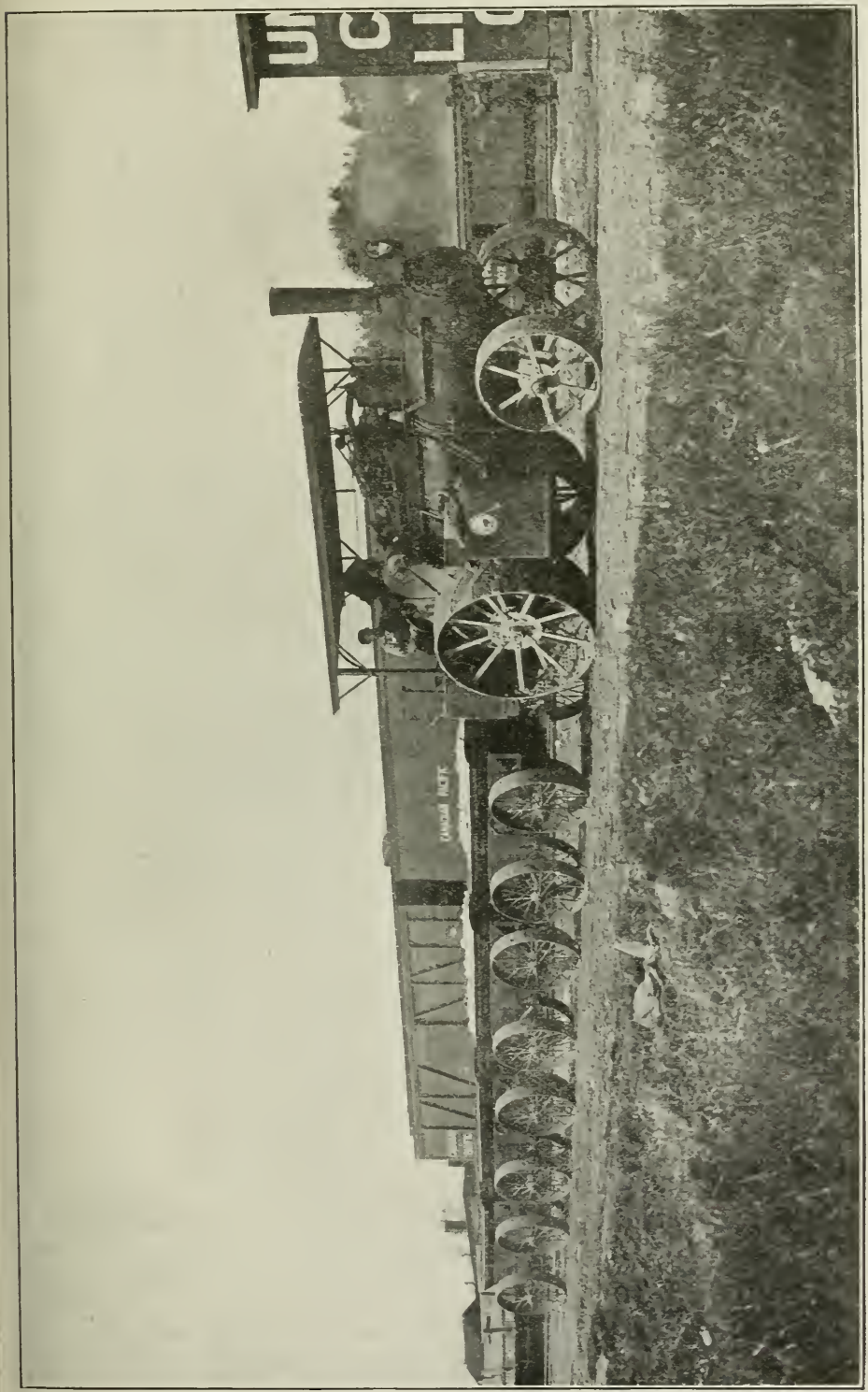
SAULT STE. MARIE AND SUDBURY TRUNK ROAD.

Total Expenditure	$76,275 40
Total number of miles graded	35
of which 10 miles has been macadamized, and ¾ of a mile surfaced with rocmac, and 13 miles surfaced with gravel.	

This road commences at the eastern limit of the town of Sault Ste. Marie and runs in an easterly and southerly direction to Echo Bay (Ekoba), a distance of fifteen miles; thence easterly a further distance of ten miles, to the village of McLennan, thence continuing easterly a further distance of 5½ miles to the village of Desbarats, thence easterly two miles to Portlock, thence easterly six miles to Bruce Mines, thence easterly nine miles to Thessalon; thence easterly to Blind River, distant eighty-three miles from Sault Ste. Marie.

Of the distance between these two points, thirty-five miles of road was ditched and graded, of which ten miles has been macadamized and ¾ of a mile surfaced with rocmac and thirteen miles surfaced with gravel.

This road, after leaving the town of Sault Ste. Marie, passes through the Garden River Indian Reserve, the townships of Tarbutt and Tarbutt Additional, Johnson, Plummer and Plummer Additional, Lefroy, Thessalon, Bright and Bright Additional, Thompson and part of Cobden, past the villages of Garden River, Echo Bay, Bar River, Desbarats, Portlock, Bruce Mines, Thessalon and Blind River. It follows in most instances the old colonization roads constructed at different times. The road is well selected where it would serve the greatest number of people, taking into consideration the character of the country to be passed through. It passes



Loading Crushed Rock at Echo Bay for the Sudbury and Sault Ste. Marie Trunk Road.

through a country in which there is a fair percentage of good agricultural land, under cultivation. In places the country is broken and rocky. Tributary to this road on the north are to be found areas of good land well cultivated. Large clearings and fine buildings are to be met with everywhere.

Owing to the unsatisfactory condition of the roads heretofore, it has been difficult and at periods almost impossible for the settlers to reach good markets at Sault Ste. Marie or other smaller towns along the railway. The road as now constructed will allow the settlers as far as Blind River, about eighty miles east of Sault Ste. Marie, to reach that point. It will also give them access to all the stations along the Canadian Pacific Railway.

Part of the road only has been surfaced with gravel or stone and it will take another season to finish the road to Blind River. Several culverts and small bridges are required to be built. The work as performed this season covered the worst parts of the road, thirty-five miles out of the eighty. The following is a general description of the work done:—

Commencing at the eastern limit of the town of Sault Ste. Marie and running east, the road was well graded and ditched for eleven miles. The first ¾ of a mile, after being macadamized, was surfaced with roemac 12 feet wide. The next ¾ of a mile was covered with three course macadam 12 feet wide. This mile and a half of the road had a very bad sub-grade and it was necessary to make the stone from ten to twelve inches deep, consolidated. The balance of this section up to mileage 5½ was covered with two course stone.

Section two extended from Garden River to Echo Bay. The work done in this connection consisted of raising, widening, riprapping and railing Echo Bay fill, the North Channel fill and the Root River fill. Gravel put down on this road during the winter of 1912 was found insufficient. It was raked and rolled and the whole section regraded and widened and resurfaced with one course of limestone. A gap is thus left unsurfaced of nearly a mile between Root River at mileage 5½ and mileage 6½. Eight miles of road were under construction.

Section No. 3.—The work done in this section consisted of grading and draining between mileage 15, Echo Bay, and mileage 20½, a large amount of riprapping was necessary as a considerable portion of this section of the road had been badly washed out, the ditches having been deepened and widened by freshets so that it was dangerous for teams to pass owing to the narrow road bed. A new right-of-way was required for a distance of ¾ of a mile. This was purchased from the adjoining land owners and a new road constructed. This section was also gravelled with the exception of 2¾ miles, which was left to be gravelled during the winter season on account of the long haul. This work has been completed since the close of the fiscal year. Ten Corrugated Iron Culverts were placed in this section.

Section No. 4.—This camp built and graded the section between Nestorville, Mile 44¼ and Mile 49¾, a distance of five and a half miles. Gravel was also placed between mile 44¼ and mile 48; the remainder being left unsurfaced on account of there being no material available without too long a summer haul. This work followed in the main an already existing road, which, however, was little more than a trail. The construction was practically new. On this section twenty-one metal culverts were placed.

Section No. 5.—This camp built, graded, drained and gravelled three miles of a road immediately east of Portlock, between mile 34½ and mile 37½. As in Section 4 this road was already in existence as a mere trail. A considerable amount

of rock work was necessary as there were a number of abrupt rocky ridges. This work comprised the westerly half of the Portlock—Bruce Mines Section; the remainder being in quite good condition and requiring only permanent culverts, some of which are in place ready to be installed in the spring. The number of metal culverts placed in this section was eighteen. It was intended also that this camp should put in permanent culverts between Desbarats and McLennan, which road was, with this exception, in fairly good condition. There was not time to do this on account of the lateness of the season and the culverts are stored at the village of Desbarats, to be installed during the coming season.

Section No. 6.—This camp built 4½ miles of road along the Mississaga River west of the town of Blind River, from mile 78¼ to mile 83. The work followed the lines of an existing road in the main, but is practically new construction throughout. For almost the entire distance the right-of-way had to be cleared and straightened. In several places as well a considerable amount of filling had to be done as the previous road was impassable for several weeks during the year, at high water of the Mis issaga River. On this stretch of road twenty-one metal culverts were placed.

Besides the above mentioned roads, the following works were constructed:

A reinforced concrete culvert 6 x 6, one and one half miles east of Portlock and two reinforced concrete bridges near Portlock, one 16 ft. and the other 30 ft. span. A reinforced concrete bridge over Anderson Creek, between McLennan and Desbarats was also built and the road straightened at this point. This involved diverting Anderson Creek and a considerable fill, stone being for the base.

Culverts used in this work were for the most part corrugated iron pipe, finished where necessary with concrete ends. The road between Sault Ste. Marie and Thessalon is now in first class condition with the exception of about ⅞ of a mile east of Root River, which requires to be resurfaced with stone.

PART OF THE DISTRICT OF ALGOMA, ROADS IN THE VICINITY OF THE TOWN OF HEARST.

Amount Expended	$18,529 61
Number of miles of bush line cut out	29
Number of miles of road graded or partially graded	7

Description of Roads Constructed.

Road No. 1.—Townships of Way and Hanlan:

Situate along the north side of the right-of-way of the National Transcontinental Railway.

Commencing at the east boundary of the township of Way, near the junction of the Algoma Central and Hudson Bay Railway, and extending westerly along the north side of the National Transcontinental Railway a distance of 5½ miles to the side road between Lots 18 and 19, township of Hanlan. This road was cut out the full 66 feet; 2.2 miles of the road was well grubbed and the timber burned. One mile of cross-lay was laid and well ditched and graded. The balance of the road, 3.3 miles is still to be burned and grubbed.

Road No. 2.—Township of Kendall and Way:

Situate between townships of Kendall and Way across Concessions 7, 8, 9, 10, 11 and 12 and part of Concession 1, township of Casgrain, 4.3 miles. Road cut the full width and grubbed 32 ft. and burned, with the exception of about one quarter of a mile on Concession 7 on the Transcontinental Railway, south to the Mattawashquia River about half a mile, the road has been well ditched and graded.

Road No. 3.—Township of Kendall:

Situate between Lots 24 and 25 across Concessions 11 and 12, 1½ miles. The road was cut, grubbed, and burnt ready for grading with the exception of a few chains on Concession 12.

Road No. 4.—Township of Kendall:

Situate between Lots 12 and 13 across Concessions 7, 8, 9, 10 and part of 11, 3 1-3 miles. The road was cut, grubbed and burnt ready for grading.

Road No. 5.—Front St. Extension, Townships of Kendall and Way:

Front St., in the Town of Hearst, was produced westerly along the southerly limit of the Transcontinental Railway Company's station grounds to the Algoma Central Railway right-of-way 1¼ miles. The road was cut out and burned in 1912. In 1913 it was well ditched and graded.

Road No. 6.—Township of Kendall:

Situate between Concessions 10 and 11, across Lots 22, 23 and 24, ¾ of a mile. The road was cut out, grubbed and burnt, ready for grading.

Road No. 7.—Township of Kendall:

North Boundary of Kendall, through Lots 13 to 29, both inclusive, 5.2 miles The road was cut out, well grubbed and burning completed with the exception of Lots 18 to 27.

Road No. 8:

Trunk road along Transcontinental Railway, north side, from the east end of the Transcontinental Railway Company's station grounds at Hearst east to the east boundary of the township of Kendall, eight miles. The road was cut out the usual width, 66 ft. The west 2 6/10 miles has been grubbed and burned off and the balance has been burnt over but not grubbed.

Besides the above roads, part of 9th Street and part of 10th Street in the town plot of Hearst were stumped and graded about half a mile. Part of Front Street about half a mile was graded.

It was found when cutting out and grading the roads in the vicinity of Hearst that little or no difficulty was met with in getting sufficient drainage, although in places the ground was level and inclined to be semi-muskeg. In the higher land the soil is first class clay loam. No sand or gravel was met with. The roads as cut out will allow settlers who have taken up lands in the town-

ships adjacent to the town plot an opportunity of reaching the station. All roads cut out will make first class winter roads. The road between the town of Hearst and the Algoma Central Railway is in good condition for both summer and winter traffic.

It was found necessary to construct a small office and storehouse combined for the storing of supplies and machinery. The building was constructed on the Lots 142 to 149 on George Street, west of 11th Street, owned by the Department. The lots were well stumped as a protection against fire, before the building was erected.

GENERAL DESCRIPTION OF ROADS CONSTRUCTED AND IMPROVED IN 1913 IN THE DISTRICT OF TEMISKAMING, ALONG THE LINE OF THE GRAND TRUNK PACIFIC AND THE TEMISKAMING AND NORTHERN ONTARIO RAILWAYS.

(All roads cut out the full width 66 feet and the centre 32 feet grubbed ready for grading and ditching.)

Total number of miles of road under construction	190
Number of miles of bush road cut out	138
Amount expended	$230,704.37

Road No. 1.—Township of Bradburn:

Situate along the north boundary of the above township on the Grand Trunk Pacific Railway, commencing at Lot 7 and extending west across part of Lot 7 and all of Lots 8, 9, 10, 11 and 12, 1.75 miles. Road cut 66 feet wide, the centre 32 feet well grubbed and all the timber and brush burned off.

Road No. 2.—Township of Bradburn:

Situate between Lots 12 and 13, across Concessions 7, 8, 9, 10, 11 and 12, 4.7 miles. Road was cut and grubbed and burning completed with the exception of 75 chains on Concession 8.

Road No. 3.—Township of Bradburn:

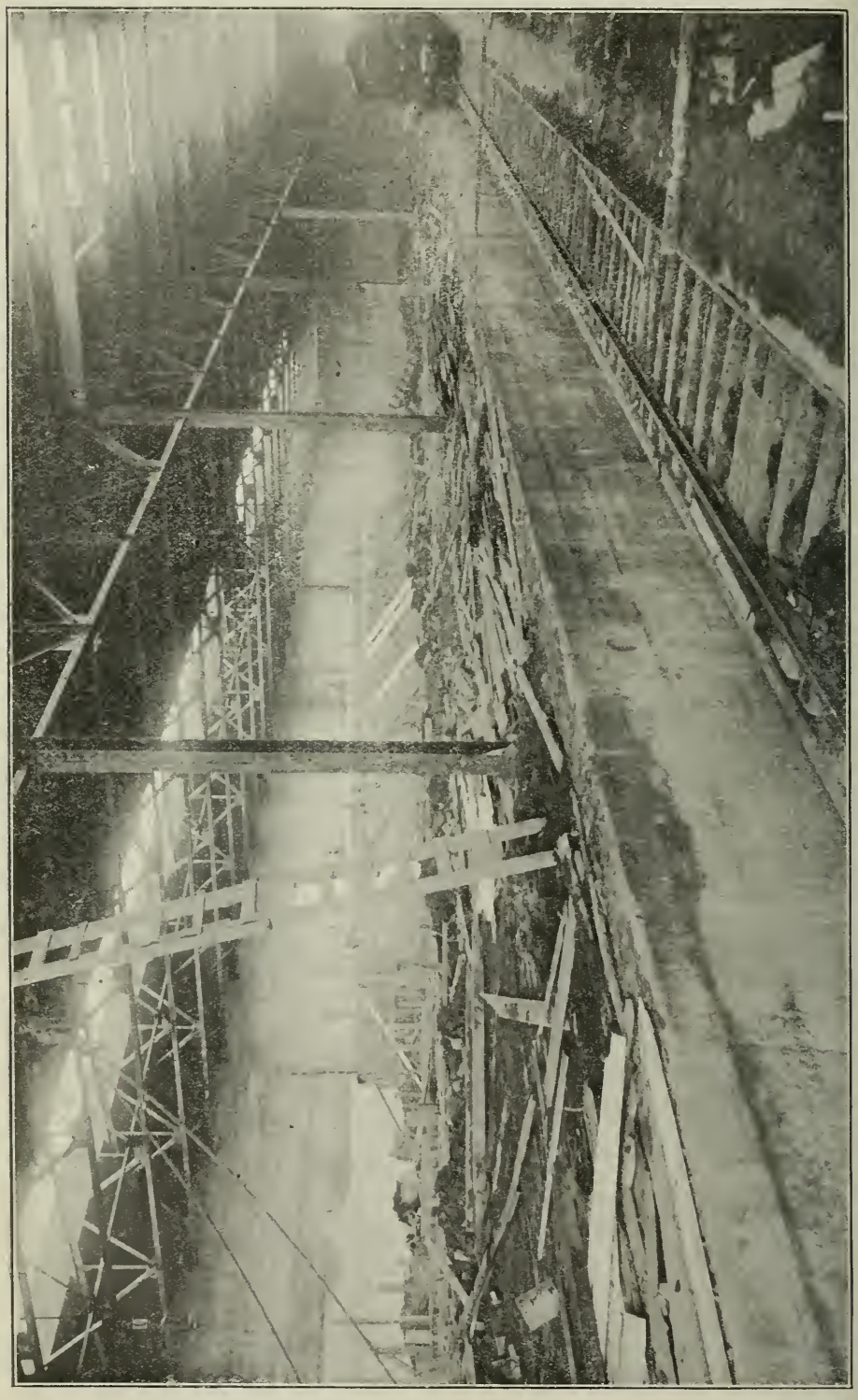
Situate between Concessions 6 and 7, across Lots 1 to 22 to the Mattagami River, 6.73 miles. Road cut and grubbed but not burnt.

Road No. 4.—Township of Calder:

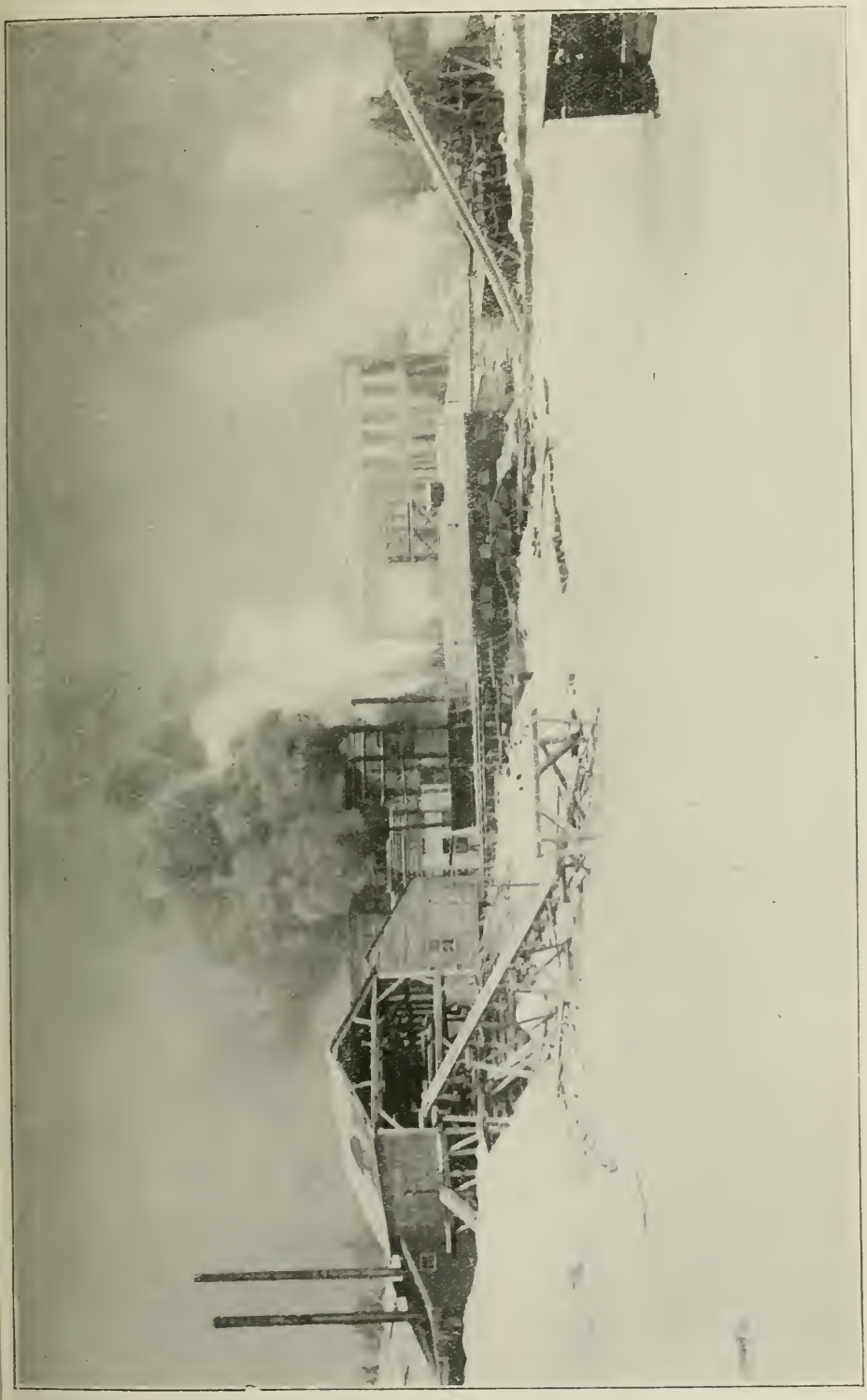
Situate along west boundary across Concessions 1 to 12 inclusive, 9 miles. Eight miles of the road has been cut and grubbed. The burning has yet to be done for over 6½ miles.

Road No. 5.—Township of Calder:

Situate along the north boundary across part of Lot 4 and all of Lots 5 to 28, both inclusive, 7.76 miles. Road cut and burned off.



Interior of the Abitibi Pulp & Paper Company's Mills, Iroquois Falls, Abitibi River, District of Temiskaming.



Saw Mill, Wood Room and Contracting Plant of the Abitibi Pulp & Paper Company at Iroquois Falls, Abitibi River.

Road No. 6.—Township of Colquhoun:

Situate between Concessions 6 and 7, across Lots 13 to 28, both inclusive, 5.06 miles. Road cut, grubbed and burned with the exception of part of Lots 18, 19, 20 and 21.

Road No. 7.—Township of Colquhoun:

Situate between Lots 12 and 13 across Concessions 1 to 6, both inclusive, 4½ miles. Road cut, grubbed and all timber and brush burned off.

Trunk Road north of Cochrane, between Lots 18 and 19, Glackmeyer.

Road No. 8.—Township of Calder:

Situate between Lots 12 and 13 across Concessions 1 to 12, both inclusive. This road was cut last season (1912), but owing to the wet season it was impossible to complete the burning or grubbing. The burning was completed this season (1913) but there is yet some grubbing to be done on Concessions 3 and 4. This season 3.11 miles were well ditched and graded between Concessions 4 and 10.

Road No. 9.—Township of Calder:

Situate between Concessions 6 and 7 across Lots 1 to 28, both inclusive. This road was cut out last season (1912) across Lots 1 to 28, but the burning or grubbing was not all done. This season the burning was completed. Across part Lots 13, 14, 15, 16, 17, 24 and 25 the road was well ditched and graded.

Road No. 10.—Township of Clute:

Situate along the west boundary across Concessions 1 to 10. Last season (1912) this road was cut, but owing to the wet season the grubbing and burning was not completed. This season the burning and the grubbing was completed and also the road cut across part of Concession 2 and all of Concession 1, 1.43 miles, grubbed and all brush and timber burned off. All the culverts required were constructed across Concessions 1 to 6, both inclusive, and the bridge over Deception Creek on Concession 5 was rebuilt. The old bridge was carried away by the spring freshet 1913. The road was then ditched and graded across Concessions 1 to 6. Concessions 7, 8 and 9 are now ready for ditching and grading.

A Typical View of the Clay Lands in the Abitibi Valley, looking east across the Townships of Brower and Fox.

Road No. 11.—Township of Clute:

Situate along the south boundary across Lots 1 to 19 both inclusive, and Lots 23 to 28 both inclusive, 7.78 miles. This road, with the exception of Lots 23 to 28 both inclusive, was cut last season (1912) but not all burned or grubbed. This year, last season's work was all burned over, and the road well grubbed across Lots 1 to Frederick House River, 1½ miles of corduroy was laid across part Lots 1 to 7 and a bridge built over creek on Lot 6; 1.77 miles across parts of Lots 1 to 6 were well ditched and graded. The balance of the road to the Frederick House River is ready for ditching. This year the road was also cut across Lots 23 to 28 both inclusive, well grubbed and all brush and timber burned off. Lots 28, to the west side of the Buskego River, were then well ditched and graded.

Road No. 12.—Township of Clute:

Situate between Concessions 2 and 3 across Lots 1 to 7, to the Grand Trunk Pacific Railway, 2.24 miles. This road was cut out this season, partly grubbed and burned over once. It still requires to be graded and two small bridges built. It was cut to serve as a winter road.

Road No. 13.—Township of Clute:

Situate between Concessions 6 and 7 across Lots 1 to 28 both inclusive, nine miles. This road was all cut out last season (1912), but was not all burned or grubbed. Across Lots 1 to Frederick House River was partly graded last season (1912). This season, however, it was found necessary to deepen the ditch 2.68

On the Town Line between Glackmeyer and Lamarche, east of Cochrane, showing how Clay Roads are rutted during the wet season.

miles from the Frederick House River, west across Lots 10 to 28 was all burned off, and the road well ditched and graded from the river west across Lots 10 to 26 inclusive. Lots 27 and 28 have yet to be ditched and one small bridge to be constructed on Lot 27.

Road No. 14.—Township of Clute:

Situate between Concessions 8 and 9 across Lots 1 to 5 and part of 6 and across Lot 28, a distance of 1.95 miles. This road was cut this year, well grubbed and the burning completed across Lots 1 to 3. No grading done.

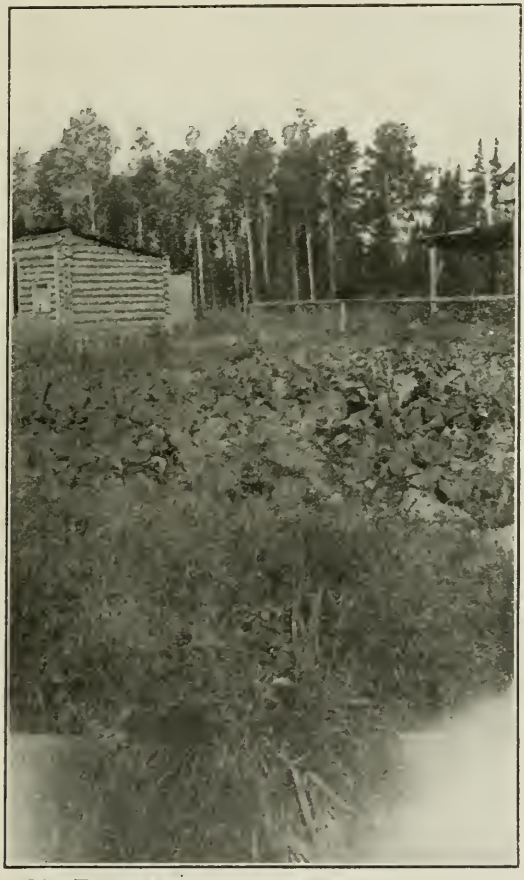
Road No. 15.—Township of Clute:

Situate between Lots 18 and 19, across Concessions 1 to 12, both inclusive, nine miles. This road was all cut last season (1912), but was not all grubbed or

burned. This year it was burned across Concessions 1 to 4 to the Grand Trunk Pacific Railway and across Concessions 7 to 10, in all 5.50 miles. Concession 7 was well grubbed but not graded.

Road No. 16.—Township of Clute:

Situate between Lots 12 and 13 across Concessions 1 to 8, six miles. Across Concessions 1, 2 and part of 3 to the Grand Trunk Pacific Railway, 1.93 miles was cut out this season but was not grubbed. This latter section was also burned off. From the Grand Trunk Pacific Railway north across part of Concession 4



Mr. Frank Moberly's Cabbage Garden, north of Abitibi Lake, near the Quebec Boundary.

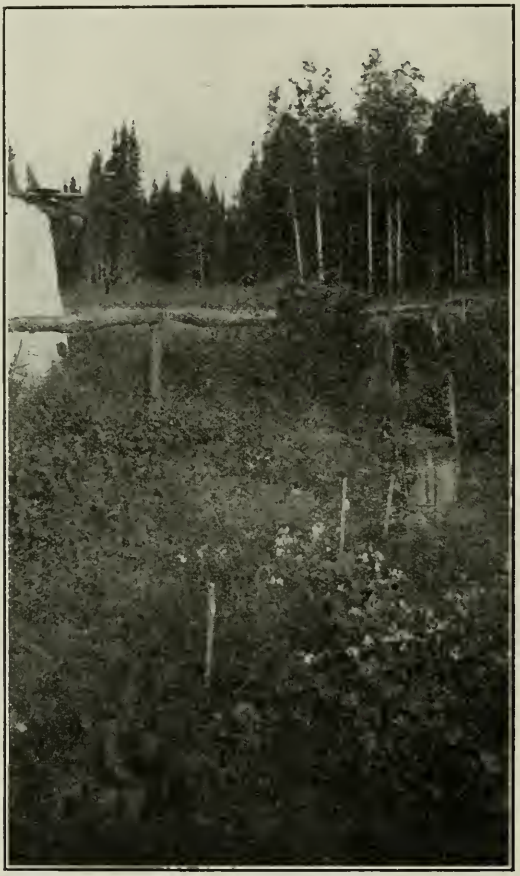
and all of Concessions 5 and 6 the road had been partly built three years ago by the Colonization Road Branch. This season it was all gone over, re-ditched and several new culverts put in. A new bridge 100 ft. long was built in place of a temporary one across the Buskego River, the old one having been carried away by the spring freshets. From the Buskego River north across part of Concession 6 the road was well ditched and across Concessions 7 and 8 well grubbed ready for ditching.

Road No. 17.—Township of Leitch:

Situate between Concessions 6 and 7 across Lots 1 to 6, 2.07 miles. This road was cut this year, grubbed and burning completed except a few chains on Lots 5 and 6. No grading was done. Three small bridges will be required to be built.

Road No. 18.—Township of Leitch:

Situate along the south boundary across Lots 1 to 10 to the Frederick House River, 2.91 miles. This road was cut last season (1912), but the grubbing and burning was not completed. This year Lots 1, 2, 3 and part of Lot 4, in all 1.12 miles, were burned over. Across part of Lot 1, 22.10 chains were graded.



Another view of Mr. Frank Moberly's Farm.

Road No. 19.—Township of Blount:

Situate along the west boundary across Concessions 1 to 10, 7.50 miles. Across Concessions 1 to 4, three miles, the road was cut last season (1912) but was not all burned. This season Concessions 1 to 4 were burned off, and the road cut, grubbed and burned across Concessions 5 and 6, 1.50 miles. Concessions 7 to 10 were cut, but only partly grubbed and burned. The road across Concessions 1 to 6 was well ditched and graded for 4.50 miles.

Road No. 20.—Township of Blount:

Situate along the south boundary from the west side of Lake Dora west across 15 to 28, 4.54 miles. This road was all cut last season (1912) but the burning and grubbing had not been completed. This season the road was all graded and a bridge built over Lillabelle Creek, Lot 25.

Road No. 21.—Township of Blount:

Situate between Concessions 6 and 7 across part of Lot 28, 10 chains. This road was cut this season but not burned or grubbed.

A Road through a Spruce Swamp, east of Cochrane Clay Belt.

Road No. 22.—Township of Blount:

Situate between Lots 18 and 19, across Concession 1 and part of Concession 2 to the Abitibi River, 1.30 miles. This road was cut last season (1912) and this season the road was all graded.

Road No. 23.—Township of Glackmeyer:

Situate along the west boundary for nine miles. This road was cut last season (1912) and partly graded, but owing to the wet weather was not all burned off. This year the remainder of the road has all been burned off. From the Grand Trunk Pacific Railway north across part of Concession 2 and all of Concessions 3 to 6 the grade was widened from 24 to 30 feet and ditches deepened throughout. A new bridge was built across creek on Concession 7 and several new culverts put in.

Road No. 24.—Township of Glackmeyer:

Situate between Lots 24 and 25 across Concessions 2, 3, and 4, 2.25 miles. This road was partly built three years ago and was in need of repair. This season Concession 2 was all reditched and graded for a distance of 60 chains.

Road No. 25.—Township of Glackmeyer:

Situate between Lots 18 and 19 across Concessions 1 to 12, both inclusive, nine miles. This road was built four years ago and was in need of repair. This season 30 chains across Concession 2 were regraded. A large sand hill on Concession 4 cut down and corduroy relaid on Concession 5, the old corduroy having

A Settler's Home on the Trunk Road six miles east of Cochrane, overlooking the Valley of the Abitibi, North Boundary of Brower.

been burned during the dry spell in July, 1913. Clay was then drawn and spread over this corduroy. Across Concessions 6 to 12 the road bed was widened from 24 to 30 ft. and the whole road across Concessions 1 to 12, both inclusive, regraded. Across Concessions 7 to 12 required burning. This was partly done this season.

Road No. 26.—Township of Glackmeyer:

Situate between lots 12 and 13 across Concessions 1 to 6, 4.50 miles. This road was cut last season (1912) but was not burned. Last winter two pile bridges, 75 and 100 ft. in length, were built on Brule or Brower Creek crossing this road, one on Concession 2 the other on Concession 6. This latter bridge was damaged by high water this spring and was repaired. This season the road was all burned off and well grubbed. All the culverts necessary were then put in and the road was all ditched and graded.

Road No. 27.—Township of Glackmeyer:

Situate along the south boundary 7.43 miles to the Abitibi River. This road was cut last season (1912) and partly graded, but little or no burning had been done. Last winter a pile bridge 50 ft. long was built over Brule Creek on Lot 11. This season the road was all burned off. The grubbing was done and 5,300 feet of corduroy laid across part of Lots 14 to 17. The whole road was then ditched and graded. During the dry weather in July ten chains of corduroy were burned across Lot 23. In place of relaying the corduroy, clay was drawn and used for grading.

Road No. 28.—Township of Glackmeyer:

Situate between Concessions 1 and 2, across Lots 19, 20, 21 and part of Lot 22, to intersect 9th Ave., Town of Cochrane, a distance of 1.12 miles. This road was cut out, well graded and ditched.

Headquarters of the Northern Development Branch at Ground Hog River, Transcontinental Railway. Showing Vegetable Garden.

Road No. 29.—Township of Glackmeyer:

Situate between Concessions 2 and 3 across Lots 1 to 28, both inclusive, nine miles. Part of this road across Lots 7 to 21, inclusive, had been cut, and across Lots 14 to 28 both inclusive, partly graded, by the Colonization Road Branch two years ago. This season the road was cut, grubbed and burned off across Lots 1 to 6, 1.88 miles, and across Lots 25 to 28, a distance of 1.32 miles. Lots 7 to 13, both inclusive, were grubbed. Lots 4 to 13 were ditched and graded. The bridge over Brule Creek, damaged by high water, was repaired. Lots 14 to 15 were ditched. Lots 19 to 21, both inclusive, were grubbed, and Lots 22 to 28, both inclusive, cut out, grubbed and all timber burned off. Bridges were built on Lot 21 and 22, and 60 chains of corduroy laid on Lots 25 to 27. From Lots 19 to 28, both inclusive, the road was then ditched and graded. Across Lot 7, ten chains of cross-lay were laid.

Road No. 30.—Township of Glackmeyer:

Situate between Concessions 4 and 5, from Abitibi River, west across to Lot 21 to the east side of Lillabelle Lake, 6.05 miles. Part of this road was cut four years ago from Lot 15 to Lillabelle Lake. This season the cutting was continued to the Abitibi River across Lots 14 to 2, 3.87 miles, grubbed and brush and timber burned off. The road was also well ditched and graded across Lots 6 to 18 and a bridge built over creek on Lot 11, and 70 chains of small corduroy laid across part Lots 9 to 11.

Road No. 31.—Township of Glackmeyer:

Situate between Concessions 6 and 7 from the Abitibi River, east of Lot 4, west across Lots 4 to 28 inclusive, eight miles. This road was all cut last season (1912) but was not all burned or grubbed. This season the road was all graded and burned off. The bridges on Lots 11, 12 and 23 had to be repaired, having been damaged by spring floods.

Vegetables at the Ground Hog River, old Headquarters of Fauquier Bros., Railway Contractors, Transcontinental Railway, July 15th.

Road No. 32.—Township of Glackmeyer:

Situate between Concessions 8 and 9 across Lots 19 to 28, 3.23 miles. Road cut, well grubbed and all brush and timber burned off.

Road No. 33.—Township of Glackmeyer:

Situate between Concessions 10 and 11 across Lots 13 to 19, both inclusive, 2.21 miles. This road was completed this season, with the exception of two culverts on Lot 13 and some burning on Lots 13, 14, and 15.

Road No. 34, Township of Kennedy:

Situate along the west boundary from the Abitibi River north across part of Concession 3 and all of 4 and 5 and part of 6, 1.70 miles. This road was cut this season, grubbed and the burning partly done.

Road No. 35.—Township of Kennedy:

Situate between Lots 23 and 25 across Concessions 1 to 4, three miles. This road was cut last season (1912) but was not burned. This season it was all burned off.

Road No. 36.—Township of Kennedy:

Situate between Lots 12 and 13 across Concessions 1 to 8, both inclusive, six miles. This road was cut this season, well grubbed and the burning completed with the exception of Concessions 7 and 8.

Road No. 37.—Township of Kennedy:

Situate along the south boundary across Lots 13 to 28, both inclusive, 3.80 miles. Part of this road was cut out last season (1912), but no burning or grading

Saw Mill and Rossing Plant of the New Ontario Colonization Co. on the Mattagami River, Township of Kendrey.

was done with the exception of Lot 28 and part of Lot 27 west of the Abitibi River, a distance of 44.05 chains. This piece was partly graded in 1912 and repaired this season. The burning east of the Abitibi River from Lots 13 to 26 inclusive, 3.56 miles, was done this season. The road across part of Lot 15 and all of Lots 14 and 13, 54.83 chains, was cut, and all timber and brush burned off. From the junction of the road, between Lots 2 and 3, township of Brower, to the west bank of the Abitibi River, 1.05 miles was well ditched and graded and the hill on east bank of river cut down.

Road No. 38.—Township of Kennedy:

Situate between Concessions 4 and 5, across Lots 25 to 28, 1.14 miles. This road was cut, grubbed and the burning completed, with the exception of Lot 27.

Road No. 39.—Township of Kennedy:

Situate between Concessions 6 and 7, across Lots 1 to 16, both inclusive, five miles. This road was cut, well grubbed and most of the burning completed.

Road No. 40.—Township of Lamarche:

Situate between Lots 8 and 9, across Concessions 1 to 6, six miles. Part of this road was built last season (1912). All of Concession 6 was ditched and part of Concession 4, and the road cut south across half of Concession 2, but little or no burning had been done. This season the burning was completed over last year's work (1912). A pile bridge, single span, was built over creek on Concession 4.

View of the Macadamized Road east of Sault Ste Marie, on the Sudbury and Sault Ste. Marie Trunk Road.

The cutting was extended this season across Concession 1 and half of Concession 2, 1½ miles. This road was cut, grubbed and the burning almost completed. The road is now ditched and graded across Concessions 3 to 6, and 20 chains across Concession 2.

Road No. 41.—Township of Lamarche:

Situate between Lots 6 and 7, across Concessions 2 to 5, and part of 1, 4¾ miles. This road was cut, grubbed and the burning nearly all completed. The road has been well ditched and graded across Concessions 3 to 5.

Road No. 42.—Township of Lamarche:

Situate between Concessions 1 and 2, across Lots 1 to 4 inclusive, and part of 5 to the east side of lake, 2¼ miles. This road was cut, the first mile through a very heavy windfall, grubbed, but not burned.

Road No. 43.—Township of Lamarche:

Situate between Concessions 3 and 4, across Lots 1 to 6, 3 miles. Across Lot 1 and Part of Lot 2, in all 66 chains, the road was well ditched and graded. The balance of this road is cut out, grubbed, but the burning is not all done. From where the road crosses the Temiskaming and Northern Ontario Railway a road 30 ft. wide, well grubbed, was cut on each side of the track south to the railway station, a distance of 10 chains.

Road No. 44.—Township of Lamarche:

Situate between Concessions 5 and 6, across Lots 7 and 8, in all one mile. This road was cut out and graded.

Sudbury and Sault Ste. Marie Trunk Road Crossing Root River, close to the Canadian Pacific Railway.

Road No. 45.—Township of Brower:

Situate along the west boundary from the Temiskaming & Northern Ontario Railway, north across Concessions 2 to 6, in all 4¾ miles. This road was cut last season (1912) but was not burned. This season it was all burned off and graded. A pile bridge was built over Brule Creek, Concession 6.

Road No. 46.—Township of Brower:

Situate between Lots 2 and 3, across Concessions 3 to 6, four miles. This road was cut and partly graded last season (1912). This season the road has been completed and a bridge built on Concession 6.

Road No. 47.—Township of Brower:

Situate along the south boundary, in all 5½ miles. This road was cut last season (1912) but was not burned off. This year part of Lot 12 and all of Lots 2 to 8 were burned, in all 3¾ miles.

Road No. 48.—Township of Brower:

Situate between Concessions 3 and 4, from Lot 1 to the Grand Trunk Pacific Railway 1¼ miles, and across Lots 6 to 12, 3½ miles. This road was cut this season, grubbed and burning completed over Lots 1, 2, and part of 3, 11 and 12. Lots 11 and 12 (1 mile) were well ditched and graded.

A Settler and Local Mill Owner, Mr. Genier, on Lot 19, Concession 11, Glackmeyer, 8½ miles north-east of Cochrane.

Road No. 49.—Township of Brower:

Situate between Concessions 2 and 3, across Lots 1 and 2, in all one mile. This road was cut last season (1912) but not burned. This year it was burned and graded.

Road No. 50.—Township of Fox:

Situate along the west boundary across Concessions 1 and 2, in all 2 miles. This road was cut last season (1912) but not burned. This season Concession 2 was burned off.

Road No. 51.—Township of Fox:

Situate between Lots 6 and 7, across Concessions 2 and 3, to the Grand Trunk Pacific Railway, a distance of 1½ miles. This road was cut and grubbed this season, but not burned.

Road No. 52.—Township of Fox:

Situate along the south boundary across Lots 12 and 11, one mile. This road was cut last season (1912), but was not burned. This season this road was burned off.

Road No. 53.—Township of Fox:

Situate between Concessions 3 and 4, across Lots 2 to 11, a distance of 5¼ miles. This road was cut, well grubbed and most of the timber and brush burned off. There remains a little burning to be done on Lots 2 to 7.

Town of Cochrane at the Junction of the Temiskaming and Northern Ontario and Grand Trunk Pacific Railways.

Road No. 54.—Township of Sargent:

Situate along the north side of the Grand Trunk Pacific Railway, across Lots 1 to 34, both inclusive, a distance of 10.91 miles. Part of this road, lots 14 to 34 inclusive, 6.58 miles, was cut season of 1912, but not burned off. This season the burning was completed over last season's work and the road cut, well grubbed and the burning completed across Lots 1 to 12 inclusive and to the Quebec boundary, a distance of 2.33 miles. The road is now nearly all ready for ditching and grading.

Road No. 55.—Township of Sargent:

Situate between Lots 4 and 5 across Concessions 5, 6 and 7, 2.35 miles. This road was cut, well grubbed and most of the burning completed and is now ready for grading, except part of Concession 5.

Road No. 56.—Township of Calvert:

Situate along the Temiskaming & Northern Ontario Railway spur from Porquois Junction (Iroquois Falls) into the Abitibi River Pulp and Paper Mills at Iroquois Falls, 6.36 miles. This work was done this season. The road commences on the north boundary of the Township of Clergue and extends north between Lots 9 and 10, Township of Calvert, to the Temiskaming and Northern Ontario Spur to the Abitibi River. It then parallels the railway on the south-east side for a little over five miles, then crosses the railway and follows the north-west side into the Pulp Company's yards and townsite. This road was cut out, corduroyed, ditched and graded; 6 bridges were constructed and 14,970 feet of corduroy laid.

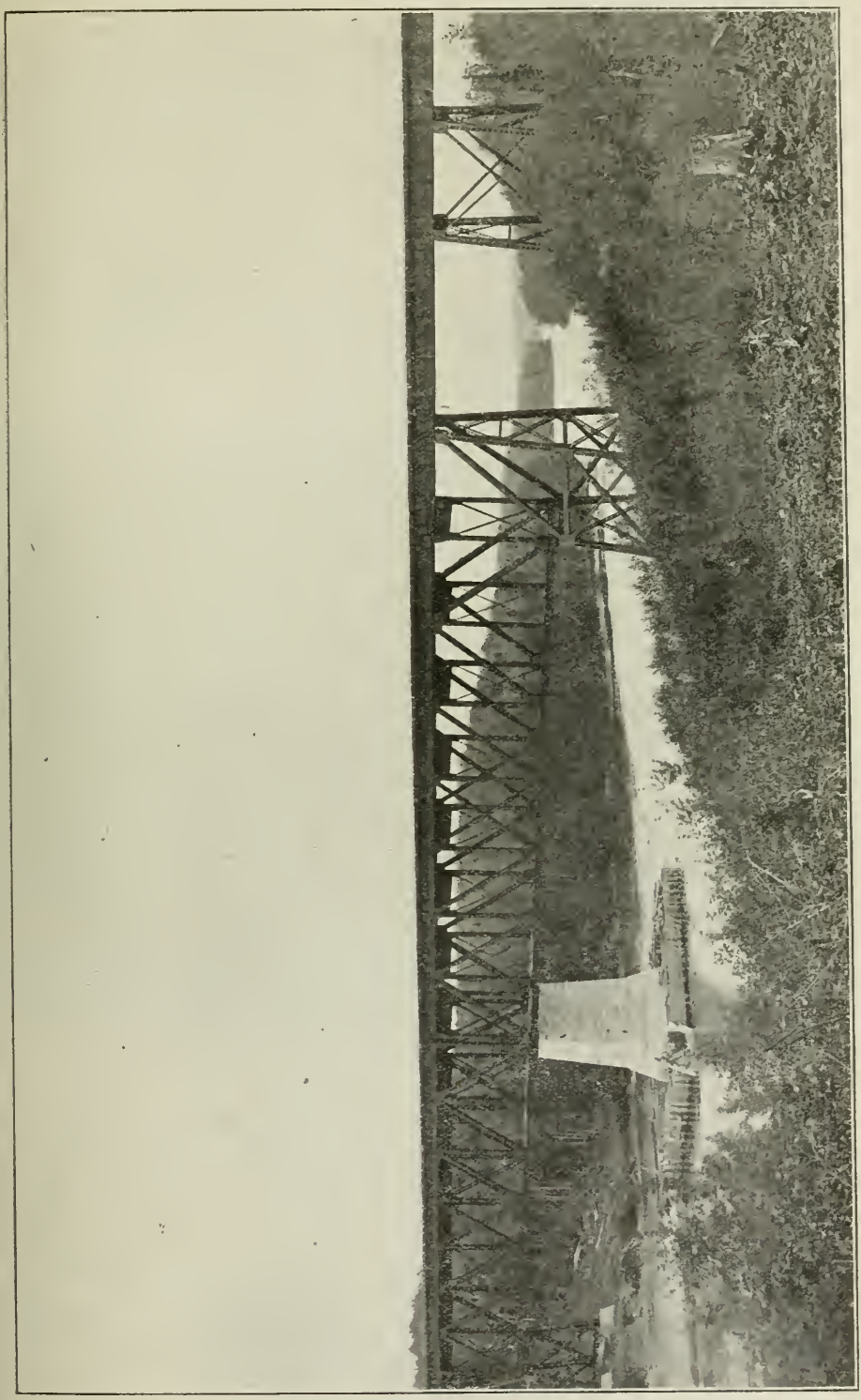
A Typical View of the White Birch and Poplar Lands in the Valley of the Abitibi, Township of Brower.

Road No. 57.—Township of Clergue:

Situate along the north boundary across Lots 1 to 12, both inclusive, six miles. This road was cut season 1912, but was not burned off. This season the burning and grubbing were completed over Lots 5 to 12, and the road well ditched and graded across Lots 7 to 12 and part of 5 and 6, a distance of 3½ miles. A pile bridge was built over creek on Lot 9.

Road No. 58.—Township of Clergue:

Situate midway on Lot 10, Concession 6, from road between Lots 10 and 11 to Temiskaming and Northern Ontario Railway station at Porquois Junction, a distance of 20 chains. This road was cut but not all grubbed or burned.



Banks of the Abitibi River at the Grand Trunk Pacific Railway Crossing.

Road No. 59.—Township of Clergue:

Situate between Concessions 3 and 4, across Lots 1 to 10, five miles. This road was cut last season (1912) but not burned off. This year the burning was completed across Lots 1 to 9, both inclusive, 4½ miles, and the road was well ditched and graded across part of Lot 3 and all of Lots 4 to 8 and part of 9, 3.12 miles. A pile bridge was built over Meadow Creek on Lot 7.

Road No. 60.—Township of Clergue:

Situate between Lots 6 and 7, across part of Concession 1, all of Concessions 2 to 5 and part of 6. This road was all cut season 1912 but not burned off. It was also partly graded across Concession 4. This season the burning was all completed and the road well ditched and graded across Concessions 2 and 3, two miles A pile bridge was built over Meadow Creek, Concession 5.

A Trunk Road one mile north-east of the Town of Cochrane, showing the Taylor Farm.

Road No. 61.—Township of Clergue:

Situate along the east boundary across Concessions 4 to 6, three miles. This road was cut last season (1912) across Concession 4 and 55 chains of Concession 5, but no burning had been done. This season it was all burned and the road cut north across Concession 6 and grubbed, but the burning was not all completed.

Road No. 62.—Township of Clergue:

Situate along the east side of the Temiskaming and Northern Ontario Railway from Porquois Junction south to mile post 220, 3½ miles. This road was cut, grubbed and most of the burning completed; 1¼ miles of ditching was done on this road and ¼ mile of corduroy laid. A pile bridge was built over creek on Lot 9.

Road No. 63.—Township of Dundonald:

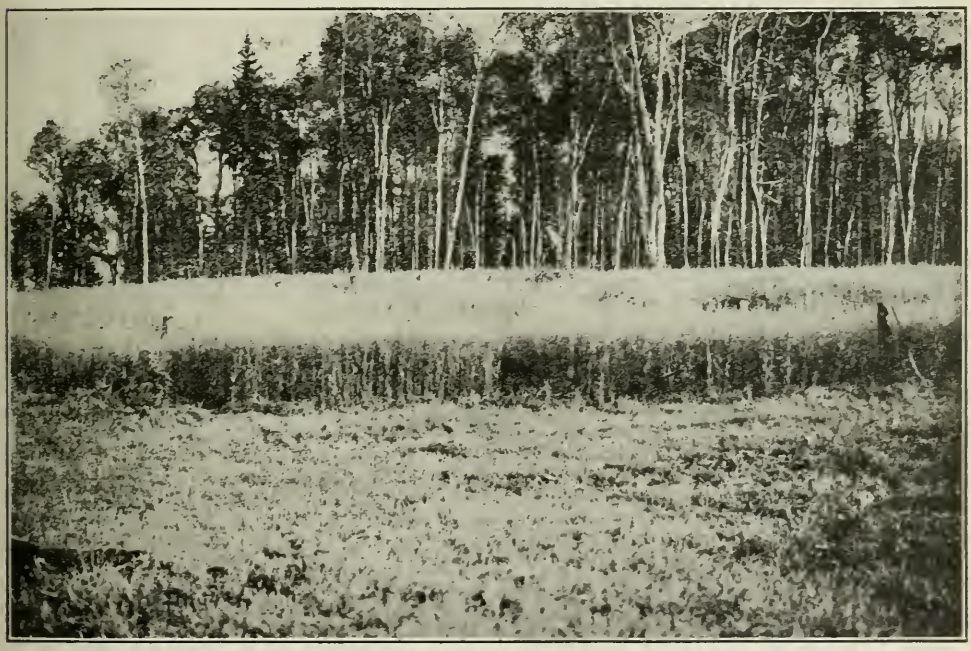
Situate along the north boundary, for 5½ miles. This road was cut last season (1912) but was not burned. This season the road was burnt off and Lot 1, one half mile, was well grubbed and graded.

Road No. 64.—Township of Matheson:

Situate between Lots 6 and 7, across Concessions 1 to 6, both inclusive, six miles. This road was cut this season and the burning nearly completed.

Road. No. 65.—Township of Matheson:

Situate between Concessions 3 and 4, across Lots 1 to 10, both inclusive, in all 5 miles. This road was cut this season, grubbed and the burning nearly completed.



Field of Oats, north of Cochrane, Township of Glackmeyer.

Road No. 66.—Townships of Machin and Fauquier:

Situate along the north side of the Grand Trunk Pacific Railway from the Ground Hog River west for 4¾ miles through the townships of Machin and Fauquier. This road was cut, well grubbed and all burned off, ready for grading.

Road No. 67.—

Situate between the town of South Porcupine and McArthur Lake, in the township of McArthur, a distance of twenty miles. About three miles of this road was partly cut out out two years ago by the Colonization Road Branch. The old road was widened and repaired and the road continued to the lake. The last or south six miles was cut 20 feet wide, but suitable as winter road only. The balance of the road is well grubbed and all low places corduroyed. Bad hills were

cut down and the road fairly well graded. Four bridges were built. The road was constructed for the benefit of mine owners operating in the townships of Tisdale, Whitney, Delora, Shaw, Adams, Eldorado and McArthur, through which this road passes.

Road No. 68.—Town of Cochrane:

In order to reach the Union Station in the town of Cochrane, it was necessary to grade certain streets which had been laid out but not improved by the municipality.

Fourth Street was produced east to the line between Lots 18 and 19, township of Glackmeyer, from Eleventh Avenue, 1,660 feet.

The main Trunk Road from east and north-east enters the town by Fourth Street, thence north along Eleventh Avenue to Fifth Street, 600 feet; thence west

Garden at the Ground Hog River, Headquarters Fauquier Brothers, Contractors, Transcontinental Railway, July 15th.

along Fifth Street to the Lake Shore Road; thence following the Lake Shore Road along the north shore of Commando Lake to Sixth Avenue, 1,800 feet.

In order to get an outlet to the townships to the north-western part of the town of Cochrane, part of Third Avenue, part of Seventh Street, and part of Second Avenue had to be graded: in all a distance of 1,600 feet. Four hundred yards of gravel was used in re-surfacing the Lake Shore along the Commando Lake.

No. 69.

The Driftwood River, a tributary of the Black River, flowing through the townships of Walker, part of Clergue, Taylor and Stock, was cleared of driftwood so as to enable the settlers in these townships to navigate the river in the summer season in small boats and to enable them also to drive their pulpwood to the Abitibi Pulp Mills at Iroquois Falls on the Abitibi River. The river, as its name implies, was full of driftwood at several points, log jams having been formed through which it was impossible to drive logs or navigate boats.

ROADS IN THE DISTRICT OF TEMISKAMING, EAST AND WEST ALONG THE TEMISKAMING AND NORTHERN ONTARIO RAILWAY, FROM EARLTON NORTH TO MONTEITH.

Number of miles constructed, graded and old roads improved—150.
Amount expended $185,612.61

Township of Walker:

Line between Concessions 1 and 2 across Lots 3 to 10 inclusive and between Lots 10 and 11, across the south half of Concession 2, and across the centre parts of Lots 11 and 12; 5½ miles. The road was cut out and burned and 3½ miles graded.

Townships of Walker and Clergue:

Town line between Walker and Clergue. This road was cut out and partly graded last season; this season the road was burned off and 2¾ miles of the grading completed.

Townships of Taylor and Walker:

Town line between Taylor and Walker, across Lots 5 to 12, both inclusive, and across part of Lot 1 to the Driftwood River, between Stock and Clergue; also road between Lots 8 and 9, Concession 1, Walker, and between 8 and 9, north part of Concession 6, Taylor; 5¼ miles. The road was cut out and grubbed and burned.

Townships of Taylor and Stock:

Line between Concessions 5 and 6 from Lot 1, Taylor, to Lot 5, Stock, 8½ miles. The road was cut out and burned. The road was graded from Lot 8 to 12, Taylor, both inclusive. The road between Lots 8 and 9, across the south part of Concession 6, half a mile was ditched.

Township of Taylor:

Line between Concessions 2 and 3, across Lots 1 to 7, both inclusive, 3½ miles. The road was cut out and grubbed and 2½ miles burned.

Line between Lots 4 and 5, across Concession 3 and part of Concession 2, 1¾ miles. The road was cut out.

Road between Concessions 4 and 5, across Lots 2, 3, 4 and 5, two miles. The road was cut out and graded. Also road between Concessions 4 and 5, across Lots 7, 8, 9, 10 and part of 11, to the Driftwood River. The road was cut out and grubbed and half a mile graded. Also road between Lots 8 and 9, across Concession 5; cut out, grubbed and burned. A bridge 108 ft. in length was constructed across the Driftwood River on line between Concessions 5 and 6, Lot 1, Stock; also a bridge between Concessions 4 and 5, Lot 11, Twp. of Taylor.

Townships of Taylor and Currie:

Town line between Taylor and Currie, across Lots 7 to 12 inclusive. Graded three miles.

Townships of Carr and Taylor:

Town line between Carr and Taylor, across Concessions 1 and 2, two miles. The road was cut out, 1½ miles of which was graded.

Township of Carr:

Line between Concessions 2 and 3 across Lots 1 to 8. Cut and graded four miles.

Line between Lots 4 and 5, across Concessions 1, 2, 3, 4 and part of 5, 4½ miles. The first 3½ miles were cut out and graded, and the last mile cut and grubbed only.

Townships of Carr and Beatty:

Town line between Carr and Beatty, across Concessions 1, 2, 3 and part of 4, 3½ miles. The road was cut out last season but not burned. This season the road was burned off and graded 3½ miles.

Township of Bowman:

Line between Lots 6 and 7, across Concessions 4, 5 and 6, three miles. The road was cut out and grubbed, and 1½ miles graded. Also road between Concessions 3 and 4, across Lot 7, ½ a mile; also road between Concessions 4 and 5, across Lots 7 and 8, 1 mile; also road between Concessions 5 and 6, across Lots 7 and 8, one mile. The roads were cut out, grubbed and burned.

Line between Lots 4 and 5, across Concessions 4 and 5; also road between Concessions 3 and 4, across Lot 4 and half of Lot 3, a total distance of 2¾ miles. The road was cut out and grubbed.

Townships of Bowman and Currie:

Town line between Bowman and Currie, across Concessions 6 and 5. The road which was cut out last season was burned off and graded this season; also a truss bridge 55 feet span was built over the Wahtaybeg River on Concession 5.

Township of Hislop:

On the town line between Hislop and Bowman. This road was cut in 1912, and this season the timber was burned off across Concessions 4, 3, 2 and 1. Concessions 4, 3 and half of 2 were graded 2½ miles.

The town line between Hislop and Beatty across Lots 6 to 13 inclusive, also town line between Bowman and Carr, across Lots 1, 2 and 3, to the town of Matheson was improved. The road was constructed several years ago, and was widened from 18 feet to 24 feet, and regraded in places covering a distance of six miles.

Road between Lots 11 and 12, Concession 6, one mile, between Concessions 5 and 6, across Lots 9, 10 and 11, 1½ miles; 2½ miles of this road cut and burned, 1½ miles graded

Township of Playfair:

On the north boundary of Playfair a road was cut out in 1912. This season the timber was all burned off for a distance of six miles. Seven culverts were constructed and one bridge with a span of 25 feet partially constructed.

Trunk Road along Temiskaming and Northern Ontario Railway:

Along the Temiskaming and Northern Ontario Railway right-of-way through part of the townships of Taylor and Carr from the line between Concessions 4 and

5, Taylor, to the Town of Matheson, a distance of eight miles; seven miles graded and one mile partly graded. On this section of the road three bridges were constructed with lengths of 120 feet, 40 feet and 20 feet.

From the town of Matheson, through part of the townships of Bowman and Hislop, continuing along the right-of-way of the Temiskaming and Northern Ontario Railway, eight miles. The timber was burned off, four miles graded and three miles re-graded. Thirty-four culverts were constructed and two small pile bridges built, each 20 feet span.

Continuing through the township of Playfair to the town line between Playfair and Cook, five miles. Ten culverts were constructed, timber on the right-of-way was burned off and one-half mile graded. Two 16-foot approaches were built on the east side of bridge constructed in 1912 across the Black River on Lot 4. In July last during the extremely dry season this bridge was burned, notwithstanding the fact that the foreman and his men were on the spot protecting it. In order, however, to save a settler's house and family, they were forced to leave the bridge, and in their absence the bridge was destroyed.

Sesekinika Road:

Commencing at Sesekinika Station on the Temiskaming and Northern Ontario Railway, on Lot 9, Concession 1, township of Maisonville, the road runs north-west along the right-of-way of said railway, crossing the same at the west side, and continuing west across part of Lot 10 and Lot 11, Concession 2, to Lot 12, thence south between Lots 11 and 12 in the said Concession to the line between Concessions 1 and 2, 2½ miles. This road was cut out the full width, stumped, grubbed and burned 30 ft., and one mile graded. Eight culverts and one small bridge were constructed thereon. This road was constructed to allow settlers in the south-west part of Maisonville to reach the railway station.

Kirkland Lake Mining Road:

Commencing at the village of Swastika, on the Temiskaming & Northern Ontario Ry., and running north-east though the township of Teck along the south shore of Kirkland Lake to the Township of Lebel, as far as Tough-Oakes Mines, seven miles. The road was cut out 50 feet wide and graded 26 feet wide. A bridge in the village of Swastika passing under the railway bridge across a tributary of the Blanche River was constructed 66 feet long, and one truss bridge 40 feet span across Trout Creek and 67 culverts were also constructed on this road, together with one mile of cross-lay. The road is well graded, and in places surfaced with gravel. It passes through a rocky country, timbered chiefly with Jack pine, poplar, birch and small spruce; little or no agricultural land is met with along this road. A small mining village has sprung up at Kirkland Lake, and considerable mining operations are being carried on.

Townships of Boston and Lebel:

Commencing on town line between Boston and Otto between Concessions 4 and 5 and running north-west through the townships of Boston and Lebel to the Dane Mining Camp. This was an old winter road cut out about 12 feet, which was improved to 40 feet wide and graded 20 feet wide for a distance of 3½ miles.

Townships of Dack and Robillard:

Widened grade and improved the road on the town line between the townships of Dack and Robillard, across Concessions 5 and 6, and constructed one floating bridge 100 feet in length.

Townships of Dack and Chamberlain:

Town line between Chamberlain and Dack across Lots 5 to 12, both inclusive, four miles. Road cut out and graded.

Township of Chamberlain:

Cut out, grubbed and graded road between Concessions 1 and 2, across Lots 1, 2, 3 and 4. Also road between Lots 2 and 3, across Concessions 3, 2 and north half of Concession 1, a distance of 4½ miles. This road was all graded with the exception of half a mile between Concessions 1 and 2.

Eight large culverts were constructed on the north boundary of the township across Lots 1 to 6 and the grades cut down.

The road on the west boundary of the township was widened, graded and improved, and continuing north between the townships of Pacaud and Marquis to the Blanche River about the centre of Concession 5, a total distance of 10½ miles.

Township of Savard:

The road between Concessions 1 and 2, across Lots 1, 2, 3 and 4, two miles, cut out, grubbed and burned, and graded half a mile.

Cut out, grubbed and ready for grading lines between Lots 6 and 7, across Concessions 1 and 2; line between Concessions 2 and 3, across Lots 7 and 8; line between Lots 8 and 9, across Concession 3. Total distance of four miles.

Township of Robillard:

Stumped, grubbed and graded the road between Concessions 4 and 5 from the East town line to Long Lake; five miles; and north-west along the north shore of the said lake to the west town line, one mile. Thence north along the west town line across Concession 6, Robillard, and Concession 1, Savard, two miles cut, grubbed and burned.

Townships of Pacaud and Catherine:

On the town line between Pacaud and Catherine the road was cut out and graded half a mile, part of Concession 3.

Township of Marter:

Constructed culverts and improved and widened the grade on the town line between Marter and Evanturel, across Lots 5 to 10 inclusive; also improved the grades, widened road and re-graded the road between Lots 4 and 5, across Concession 1 and part of Concession 2; also graded road between Concessions 4 and 5, across Lots 1, 2 and half of Lot 3, 1½ miles; also re-graded road across Concessions 4, 5, and 6, between Lots 4 and 5, three miles; and cut out the town line between Marter and Catherine across Lots 1, 2, 3 and 4, two miles; also burned off timber on road between Concessions 3 and 4, across Lot 4 and half of Lot 3, and on the road passing through the centre of Lot 3, 1½ miles.

Road between Lots 10 and 11, across Concessions 1 and 2, graded and improved, two miles; also graded and improved road between Concessions 2 and 3, across Lots 9 and 10, one mile; also graded and improved road between Lots 8 and 9, across Concession 3, one mile; also graded and improved road between Concessions 3 and 4, across Lots 8 to 11 inclusive, two miles; also cut out and stumped road between Lots 8 and 9, across Concessions 4 and 5, two miles.

Township of Evanturel:

Road between Concessions 1 and 2, across Lots 1, 2, 3 and 4, two miles, cut out, burned and grubbed.

Town line between Evanturel and Armstrong, across Lots 1 to 6, both inclusive, three miles; and the town line between Ingram and Hilliard, across Lots 1, 2, 3 and 4 and part of 5 to the Blanche River, 2¼ miles; cut out, grubbed and burned.

Township of Ingram:

Cut out and graded road between Concessions 2 and 3, across Lots 1, 2, 3 and 4, two miles.

Township of Armstrong:

Road between Concessions 5 and 6, across Lots 1, 2, 3, 4 and 5, 2½ miles; cut out and burned.

Earlton and Heaslip Road:

Commencing at the Village of Earlton and running north along the east side of the right-of-way of the Temiskaming and Northern Ontario Railway to the north boundary of the township of Armstrong; thence east along the town line between Armstrong and Evanturel, which road is above described, to the line between Lots 4 and 5, township of Evanturel, and continuing north along the said line across Concessions 1, 2 and 3 to a point on the line between Concessions 3 and 4, Evanturel, half a mile east of the Village of Heaslip, 6 miles in all. The road was cut out and graded.

South Lorrain Road:

From the town of Haileybury a road was partly cut out for a distance of two miles.

J. F. Whitson,
Road Commissioner.

The Hon. W. H. Hearst,

Minister of Lands, Forests and Mines.

Sir,—I beg to recommend the expenditure of the following amounts under 2 Geo. V. Chap. 2, on the construction of new roads, repairing and finishing of old roads, the construction of bridges and the clearing of a small farm for experimental purposes in Ground Hog Valley, during the season of 1914.

District of Rainy River.

In the Rainy River Valley, to complete and re-surface roads constructed last season, also the opening up of new roads tributary to the trunk roads constructed last season $85,000

District of Kenora.

Completing the trunk road north-west of the towns of Kenora and Keewatin, which was partially constructed last season, also the construction of new roads in the agricultural section north-east and north-west of Dryden and in the vicinity of Vermilion Bay 35,000

District of Port Arthur.

Re-surfacing trunk roads graded last season, the construction of short roads adjacent to the trunk roads constructed last season, also construction of new roads in and north of the Township of Dorion on the C. P. R.... 60,000

District West of Fort William.

The extension of the trunk roads begun last season, re-surfacing and gravelling portions of the trunk roads partly constructed last season, including the Pigeon River or International Boundary and Duluth Road, also the construction of a bridge across the Kaministiquia River..... 90,000

Sudbury and Sault Ste. Marie Trunk Road.

Finishing road between Echo Bay and Blind River under construction last season, also continuing the trunk road between Blind River and Worthington 90,000

District of Sudbury.

Re-surfacing part of the trunk roads constructed last season in the Blezard and Chelmsford Valleys, construction of new trunk roads through Blezard Valley, the completion and extension of the West Shining Tree Mining Road, the repairing of Long Lake Mining Road 50,000

Sudbury and North Bay Trunk Road.

The construction of a trunk road from Sturgeon Falls west to Sudbury..... 50,000

North Bay and Mattawa Trunk Road.

Re-surfacing part of the old road, the construction of a trunk road from Callander south to Powassan, the construction of a bridge across the Amable du Fond River on the North Bay and Mattawa Road..... 50,000

Haileybury and South Lorrain.

Mining and agricultural road in the South Lorrain Mining District and farming section, west of Lake Temiskaming 15,000

Mining road from the Elk Lake Branch of the T. & N. O. to Maple Mountain Mining Section and other mining roads in the vicinity of Elk Lake..... 20,000

Completing South Porcupine mining road and other mining roads on the vicinity of Porcupine 20,000

Colonization roads in the vicinity of Long Lake west of Charlton, including three large bridges 35,000

Temiskaming and Northern Ontario Railway.

Roads along the T. & N. O. Ry. from Englehart north to Cochrane and extending west as far as Charlton and Porcupine and east as far as the agricultural land extends, including the construction of a bridge on White River..... 120,000

Transcontinental Railway.

Roads along the Transcontinental Railway from the Quebec boundary west to Hearst, to cover also the construction of ferries across the Abitibi and Frederick-house Rivers, to cover the completion of roads cut out last season, the construction of new roads where settlement has taken place, and the opening up of new roads where immediate settlement is likely to take place..... 105,000

A proper survey and location of proposed trunk road along the Ottawa River from Mattawa to Pembroke 15,000

Larder Lake Mining Road.

Repairing and extending the Larder Lake Mining Road 5,000

For clearing small experimental farm in the valley of the Ground Hog River on the Transcontinental Railway, where there is a large area of rich clay soil, this with a view to testing the climatic conditions of that section of the country, to cover also the expense of making additional accurate tests of the soils in the different sections throughout the Clay Belt..... 3,000

Unforeseen work, exploration and surveys of new roads, renewing of old bridges and construction of new roads.	77,000
Office and engineering expenses, equipment and plant	25,000
	$950,000

I have the honor to be, Sir,

Your obedient servant.

J. F. WHITSON,
Road Commissioner.

On the Niagara River Boulevard.

REPORT

OF THE

PUBLIC ROADS

AND

HIGHWAYS COMMISSION

OF

ONTARIO

1914

PRINTED BY ORDER OF

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To His Honour,

The Lieutenant-Governor in Council:

The undersigned members of the Public Roads and Highways Commission, appointed by commission bearing date the 31st of July, 1913, have the honour to submit the following Report respecting matters upon which inquiry was authorized and directed.

Your Commissioners must make it clear that they regard their position as that of a temporary body, designed to make a preliminary survey of a subject at once of enormous importance to the people of this Province, of vast proportions and far-reaching ramifications, and of a nature not susceptible to a too hasty laying down of complete and minutely specified proposals. As will be explained on a later page, it is the view of Your Commissioners that a more permanent advisory commission, designed to study technical policy—as opposed to general policy, which must remain in the hands of the Legislature and Your Honour's advisers—might be of service, and this advisory commission might later, when certain investigation which Your Commissioners are about to suggest have been carried through, profitably assist the Minister in the formulation of a detailed plan.

For the time being, Your Commissioners deem it proper to limit their report to certain proposals for preliminary organization and investigation, and to the advancing of certain considerations and suggestions.

I.

Your Commissioners desire at the outset to lay before Your Honour certain general ideas with the importance of which they have been impressed in the course of their study of the subject. If the Province of Ontario is to grapple successfully with this problem, they are persuaded that effort must run along these lines.

First.—Your Commissioners are convinced that the cities must co-operate with the country districts in procuring the blessing of good roads. They are aware that the opinion is frequently advanced in the cities that to provide good roads is peculiarly and indeed exclusively the farmer's business; but consideration of the subject has led them to a different conclusion, which will be maintained in a subsequent page of this report.

Co-operation of Cities Necessary.

Secondly.—Your Commissioners believe that there is impending a revolution in farm operations. Two centuries ago or less the European farmer used the pack-horse to take his products to market. A revolution in methods occurred, and he came to employ wagons, which were hauled along roads much better than the tracks his ancestors had known. The self-propelled vehicle has come to stay, and Your Commissioners are convinced that the successful solution of the problem of good roads in some part depends upon a recognition of that fact. Indeed, the motor, to no small extent, creates the problem, for it has proved so destructive to main highways which resisted the wear and tear of horse-drawn vehicles, that means must be devised to guard against a deterioration, which now proceeds with a rapidity formerly unknown. The motor vehicle, in short, cannot be ignored in a consideration of the subject.

Market Roads.

More than that, opportunities as well as difficulties are created by this new method of transportation. It presents some, at least, of the features essential to profitable use by farmers; it conveys loads of a size so moderate that a single farm can furnish one or more than one, yet so large as to out-class the old horse-drawn wagon; it requires, not specialized tracks, like railway, but a common highway, albeit improved to a standard within the reach of the community; it is free from the difficulties of traffic adjustment which have made the conduct of railways a business by itself, and a peculiarly difficult business. In short, it is an individualistic method of transportation, and thus commends itself to farming, the most independent and individualistic occupation in the world. Public attention at present tends to fasten upon the pleasure car, but Your Commissioners find themselves much more interested in those vehicles, some designed for the transportation of passengers, some for the carriage of freight, which they are persuaded before long will be in general use by the farmers of the Province. They suspect, indeed, that the days of the use of the motor car for mere pleasure already are numbered; that in another decade the joy-riding may be done in the air, and the automobile will be relegated to the purposes of sober labour. Already there are cheap motor cars to be obtained; the farmer of to-day can procure one of these with as little straining of his resources as his grandfather could a top-buggy: and it is but reasonable to expect a further lowering of the price. In this beneficent revolution, good roads must play a necessary and important part.

Thirdly.—Your Commissioners have been driven to the conclusion that the subject of good roads is closely associated with questions of taxation and taxation methods. Good roads mean money, and money for public purposes must be furnished by the people, in one form or another. Certain problems are raised by this question of furnishing money, and upon them Your Commissioners will offer certain observations upon a later page.

Taxation.

Fourthly.—Your Commissioners must avow themselves greatly interested in the problem presented by the township roads, those gravel or earth highways which pass the doors of the great mass of farmers and afford them access to the county or market roads, which lead to the centres where they sell their products and make their purchases. Your Commissioners estimate these township roads at eighty-five per cent. of the whole of the highways. This represents an enormous mileage, and this bulk of the problem constitutes an obstacle, the formidable proportions of which Your Commissioners know only too well: but, however great the difficulty, they must assert that in their eyes a principal object of a good roads policy must be the rapid bringing up of these roads, the ones used by the mass of the people, to a fair standard of efficiency. They make this assertion while quite conscious of the fact that certain highways—interurban roads, suburban roads, market roads, and others—are called upon to bear specially heavy traffic and so must be brought up to a special standard. Particular cases of this sort unquestionably must be dealt with and treated with proper regard for efficiency: but Your Commissioners repeat that the great point of attack must be the market roads over which the farmers haul the food products upon which the entire Province lives.

Township Roads.

Fifthly.—Your Commissioners must submit a set of considerations glanced at in an earlier paragraph. To instal a perfect system of roads in a Province of such enormous size as Ontario would mean an immense sum of money; a sum which is

Gradual Development.

impossible for us of to-day, but which twenty or thirty years ago would have been a mere incredibility, and which may not seem so impossible twenty or thirty years hence. The revenues of the Province in 1900 were about four millions; they now exceed nine millions, and as the vast resources of the public domain come to be realized, there will be further advances which can be guessed at more easily than calculated upon. The position thus seems to be that there is obtainable now an amount of public money sufficient for a certain expenditure, but inadequate for the huge amounts which could be spent upon so enormous a road mileage as that of Ontario; but that in the future, more ample monetary resources may be at our disposal. For the moment the terms of our problem are the reverse of those of some of our neighbours. The State of New York, for instance, has a restricted area to deal with, a huge population and a limitless purse upon which to draw; the Province of Ontario has an enormous area, a sparse population, and monetary resources which, while not meagre, nevertheless have definite limits. It is because they bear in mind this contrast between present conditions and future expectations that Your Commissioners recommend a policy which they regard as at once within the scope of our present powers and as suitable for expansion should the future bring a day of very large things. They are disposed to bring forward proposals of this nature because from a strictly technical standpoint, the art of road-building is in a state of transition. Until the advent of the high-powered motor car, that art had been fairly mastered; but the motor has created new difficulties which have to be studied, and a final solution of these has yet to be reached. The present is to some extent an era of experiment, and prudence, as well as necessity, counsels the reservation of very large expenditures to a period when more is known about construction methods.

II.

Your Commissioners now put forward their immediate proposals. Their suggestion is that the Province embark upon a definite fifteen years' policy, and establish a form of organization carefully designed to be simple and flexible, and to fit itself into the development of the future. The work to be done, they conceive, should be of a permanent character, but as permanent roadways are constructed, proper measures should be taken to ensure efficient maintenance, and the expenditure on maintenance must grow as a service of this sort is built up. The method to be pursued, they recommend, is the fixing of a certain scale of expenditure during the prescribed period; the devoting of a portion of that sum to the raising of a bond issue whereby considerable capital sums could be obtained at once for permanent work; and the extinguishing of these bonds at a fairly rapid rate, so that they shall not outlast the roads which they will represent. The total capital expenditure which they propose for this period is $30,000,000, the securities to be issued in instalments as the growing organization is able profitably to spend the money. Allowing for interest and sinking fund outlays, Your Commissioners estimate the annual expenditure upon permanent roadways towards the close of the period at approximately $2,500,000. This would be, roughly, at the rate of $1.00 a head for the population of the Province, or about the payment per head in France for the maintenance of a superb system of highways. The money, Your Commissioners believe, should be raised from various sources—Province, Counties, Cities and Towns, and should be expended by various bodies, a cardinal principle being that the people themselves should be as close to the expenditure and the responsibility as possible.

Immediate Proposals.

For the expenditure of so large a sum of money, and the conduct of so important, so continuous, and so technical an undertaking, a permanent administrative body is necessary. It should be under a Minister of the Crown, and under him should be a permanent head for the administrative work which will be inevitable. A Chief Engineer will be necessary, for a high quality of skilled and scientific work is demanded if the enterprise is to be economically and successfully undertaken. As already noted, Your Commissioners think that in addition there is scope for an unpaid Advisory Commission—comprising three men of affairs, their function being to consult with the Permanent Head, Chief Engineer and Minister, on technical (as distinguished from general) policy, and to assist in interesting the general public in a project which every citizen should regard as his own affair. The proposal is dealt with at length on a later page. The central organization thus established, Your Commissioners suggest that the subordinate service be left to a future date and later experience.

Organization of Good Roads Department.

The question now to be faced is how rapidly this scheme can be set on foot. Your Commissioners are of opinion that a satisfactory organization cannot be ready before 1915, and that the coming season should be devoted to a rapid preliminary study of physical conditions. The actual mileage of the roads has been ascertained, but less is known upon the all-important subject of the available supplies of road-building material. The Dominion Geological Survey, with great kindness, has during the past autumn carried on a partial investigation along lines which will show what qualities and quantities of material are available, and how they are distributed: and we have reason to believe will continue that work during the coming season. The nucleus of the central organization, and the permanent Advisory Commission, if appointed, might with profit prosecute the following lines of investigation:

Preliminary Work.

(1) A motor survey of the main-travelled roads; parties suitably composed might traverse these roads and form an estimate of their present condition and the amount and kind of work necessary to bring them up to a satisfactory standard.

(2) A study of the township roads prosecuted by selected engineers, to determine the condition of the more important ones, with a view to their improvement.

(3) A traffic census designed to give fairly exact information as to the volume of traffic now borne by the highways.

(4) A study of the market roads in counties not now under The Highway Improvement Act, with a view to suggesting to each of such municipalities a suitable system of market roads.

(5) A determination of equitable suburban areas for each city, as suggested herein.

(6) A survey of the proposed Toronto-Hamilton and Ottawa-St. Lawrence Roads; and certain investigations of the Queenston-Hamilton or other roads of a similar character. In this way Your Commissioners are persuaded the ensuing season could be spent in a profitable preparation for the concerted and coherent plan which is to begin in 1915, and to near completion probably in 1930.

Such are certain very broad features of the problem as it appears to Your Commissioners, and such are the outlines of the immediate proposals they have to lay before Your Honour. Conceiving the subject to be one which interlaces itself with the corporate life of the community in innumerable ways, Your Commissioners have set on foot inquiries on a variety of subjects, chiefly relating to the agricultural development of the Province and the use of the roads, some of which may not seem,

at first sight, to have an immediate bearing upon the subject; they venture to represent, however, that these have value in disclosing the ramifications of the interests affected, and in promoting a clearer apprehension of the relations the problem bears to the life of the Province; and to recommend that these inquiries be further prosecuted.

They submit, in the appendices to this report, the results of some of these inquiries. In some cases they constitute a more extended treatment of certain subjects which are merely glanced at in this report. They venture to draw attention to several maps, which set forth in graphic form certain facts about the Province which they believe should be widely known and receive careful attention. One of these is the map showing the movement of population in the decade from 1901 to 1911; and makes it clear that cities must be concerned in the development of rural districts and the support of their road systems. Much interest also attaches to the maps showing the varying productivity of the several portions of the Province, and the estimate of the areas required for the support of the principal centres of population also merits attention.

With these preliminary observations, Your Commissioners proceed to a more detailed examination of a number of subjects which have been briefly touched upon in the foregoing pages.

III.

In this connection Your Commissioners would set forth their views upon the subject of the classification of roads.

Classification of Roads.

The general classification of roads and their division into groups for control are matters of primary importance in dealing with public highways. The cost of construction and maintenance, and the methods to be applied, are largely in proportion to the amount of traffic on the several roads; and an intelligent classification is basic, in apportioning the cost fairly, and in providing for efficient methods of construction and finance.

The Province of Ontario may be divided as follows:

(*a*) Well settled areas, about	30,000	sq. miles
(*b*) Areas containing scattered settlements, or at present available for settlement, about	30,000	" "
(*c*) Areas likely to remain for many years in a state of nature, but containing wealth in the form of timber, minerals, fisheries, and fur-bearing animals, about	200,000	" "
Total area	260,000	" "

The area of England and Wales, with a population of over 36,000,000, is under 60,000 square miles. Thus the settled area in Ontario, whose road system is the subject of the present inquiry, is about one-half that of England and Wales, and the total arable area whose equipment with roads is a prospect of a measurably near future, is about the same as that of England and Wales.

The closely settled area of Ontario at present is traversed by about 50,000 miles of roads, and in addition there are colonization roads, which the Provincial Government builds in the newer districts to encourage settlement, and often in advance of it. These colonization roads raise a set of problems so diverse from those of the highways of the settled portions of the country that Your Commissioners do not recommend that they be detached from the organization now in

charge of them, and they shall henceforward omit them from the purview of this report. Their main concern is with the 50,000 miles of roadways in the 30,000 square miles of the settled and organized portion of the Province.

To Your Commissioners the highways of Ontario seem to fall into the following divisions:

1. **County or Market Roads.**—These fall into the following subdivisions:

(*a*) *Suburban Roads.*—These are close to the cities, and have to bear perhaps the heaviest traffic of any rural highways; partly because some of them are used for interurban traffic, partly because of the traffic created in a belt about the city by the propinquity and the demands of its great consuming population. Often the farmers living in these belts are in a sense citizens of the towns whose market they supply, and whose shops they frequent. The cities are specially interested in the roads of this class, which have a direct bearing upon the food prices which prevail in them, and upon the comfort of their citizens.

(*b*) *Interurban Roads.*—These are main-travelled highways between centres of population, and are subjected to considerable use by persons other than farmers.

(*c*) *Rural Market Roads.*—These are main-travelled highways used mainly by farmers on their way to the centres where they buy and sell, but used by many whose properties do not border them. Often many of the township roads to be noticed in a moment discharge their traffic into these small arteries of local traffic. It is a function of these roads to lace together the various townships and rural communities.

2. **Township Roads.**—These constitute the vast mass of the roads of the countryside; they serve mainly the farmers who live alongside them, and for the most part lead into main-travelled or market highways.

The investigation made by Your Commissioners as to the proportion borne by these two general classes of roads to each other is not complete, and in their opinion should be continued. In the present circumstances, the general condition of rural roads being so indifferent, interurban and market routes have a tendency to shift, as one stretch of road is improved or another allowed to deteriorate; so that the volume of traffic borne by a particular route is not an absolute proof that under a proper organization of the road system of the Province, it would not be a main-travelled road. A road census would show what amount of travel is furnished to-day by a given district, and the channels which it now takes; but considerations such as the density of population, the productivity of the land, railway construction, possible or probable development, the distribution of road-making material, and so forth, would have to be taken into account.

Investigation Necessary.

One such consideration is the possibility of future urban growth which will lead to the places concerned sending out and attracting to themselves a greatly increased volume of traffic; should this occur, the place so developing would need additional market and interurban routes, striking out from it at varying angles, and in some cases cutting diagonally across the present rectangular road-patterns. It is suggested that tentative plans for such diagonal roads be drawn up with regard to certain prominent centres, and some arrangement—such as the prohibition of the erection of buildings in their track—be made to ensure the possibility of their being constructed at the lowest possible cost, if need should arise in the future.

Future Development.

It is the opinion of Your Commissioners that if due care is taken in studying

the situation, that the county roads, those taking care of the heavy non-local traffic, need not greatly exceed fifteen per cent. of the whole. Thus they view the problem as that of bringing 42,500 miles of township roads to a reasonably fair standard, and of fitting 7,500 miles of county roads to bear the severe demands made upon them.

Toll Roads.

This report would not be complete without some reference to toll roads, and this appears a suitable connection in which to touch upon this subject. As an evidence of the development of the country, toll roads have, during the past fifty years, passed from being the most welcome institution to that of the most despised. It should not be forgotten that in the earlier period of this country's history, when the resources of the people were quite insufficient to meet the needs of transportation, those who were prepared to build roads were public benefactors, even if allowed to collect interest on their investments through tolls. At the present time, county councils have the power to include them in their county roads system, the Province paying one-third of the purchase price. This plan has done away with a number, but some remain in Carleton County and a few isolated cases. It would appear that the additional machinery for controlling the various classes of county roads should be able to put into operation provisions similar to those in the existing law for the acquisition of these roads. With the aid for roads from cities, such as Your Commissioners suggest, it should be a very easy matter for the machinery of the suburban area in Carleton to reach an equitable basis and to allow the two-thirds cost—ascertained by arbitration—as between city, county, and possibly other local interests; while toll roads in other situations could be dealt with on the basis of the class of road within which they fall. The matter is one to which the Advisory Commission should properly extend their services.

IV.

County Roads: Selection—Cost—Control.

The cost of the county roads is bound to be considerable. Until the advent of the high-speed motor, the art of road-building had been in a fairly settled condition, but the new vehicles have thrown it back into an experimental stage. The problem is rendered the more difficult by the fact that motors and horse-drawn vehicles use the same roadways, with destructive effect; for the narrow tires of heavy wagons grind the stone to dust, and keep the road in a condition in which the shearing effect of rubber tires of the motor is most severely felt. Thus certain types of roads which would withstand motor traffic alone, fail when used by both types of vehicle. The practical effect of this condition is that the cost of roads exposed to heavy traffic is increasing.

Your Commissioners desire to make the following recommendations with regard to the treatment of these roads, which are subject to specially heavy traffic:

First.—With regard to *suburban roads,* the selection of roads to be regarded as such should lie with the Province; the various interests affected should, of course, be heard.

The control of the construction and the subsequent maintenance should be committed to Boards of Trustees, on which the city and the county should be represented. Until the road examination suggested elsewhere is carried out this summer, so as better to determine the grouping of these roads, it is not practicable to come forward with a clear plan of selection of these roads. An object of considerable importance is as far as possible to keep down their numbers.

With regard to the financial measures necessary to construct and maintain these special roads, Your Commissioners desire to recall what they already have written with regard to the justice of asking the cities to contribute to the support of roads in their suburban areas. They see no reason why that support should not be as general as, or on equal terms with, that given by rural municipalities. However, as it is a new departure, they suggest that the annual support given by the cities should not exceed a rate of three-quarters of a mill. It may be noted in this connection that some townships have been paying rates as high as five mills for roads. The funds provided by the cities should be expended solely on roads within their own suburban areas. The proportions of cost to be borne by the several parties concerned in these roads, Your Commissioners suggest, should be as follows:

The city	thirty per cent.
The county	thirty per cent.
The province	forty per cent.

Should the cost exceed $10,000 a mile, the excess should be levied as a local improvement tax.

Secondly.—The treatment of *interurban roads* may be noticed. Within suburban areas, these roads should be treated as suburban roads. Once outside the suburban belt, the cost might be divided into three equal portions among the Province, the county, and the motor vehicles, and as the Province is the recipient of motor fees, its proportion might be two-thirds up to a total average cost of $12,000 per mile.

The foregoing recommendations apply to permanent construction work. The distribution of the cost of maintenance must now be considered. Your Commissioners recommend that in the case of suburban roads, the city, the county, and the Province should each contribute a third. In the case of the interurban roads outside of suburban areas, they recommend that the county contribute sixty per cent. and the Province forty per cent.

As regards *county rural roads*, the control, in the opinion of this Commission, should rest with the county council, or in a permanent commission to be selected by that body. As regards the cost alike of construction and maintenance, the division Your Commissioners propose is sixty per cent. to be borne by the county and forty per cent. by the Province.

V.

Township Roads.

The problem of township roads next calls for notice. An opinion which finds influential backing is that a vast amount of energy is wasted on these roads through the dumping of earth on the roadway to be quickly washed away during the usual wet season. Therefore, these township roads need attention. There are four hundred and twenty-six organized townships in the Province, with a total assessment in 1912 of $604,737,037. The average rate for roads and bridges of this class is about $1,500,000 annually.

Your Commission holds that the control of such roads, and the work of construction and supervision must rest as at present, entirely with local township councils.

It nevertheless seems highly important that some assistance should be extended to those townships, as the welfare of the Province demands that a heavy percentage of their rural roads should be brought up as quickly as possible to a fair standard

as earth roads; and it is felt that to accomplish this, some provision for stimulating local interest and directing local endeavour along channels in which it will prove most effective should be made.

It must be stated that with the very limited information available regarding these roads, it would seem questionable to attempt to deal with them in any positive way at the present time. The new highways organization, therefore, should be specially charged to give attention to main township roads. Provincial support meanwhile might be limited to three years, when the Department would be in a better position to bring forward some plan for rapidly bringing these roads up to meet the business needs of the people.

It is proposed that the aid should not be given to townships until the county has assumed a system of market roads; otherwise, as alternative plans, they might seriously interfere with the installation of a proper system of such county roads. It is felt by Your Commissioners that provision for a system of good market roads in each county is of first importance and that aid to townships should not be in any way allowed to take the place of such roads. Aided county and township roads are designed to be complementary parts in a general scheme; and aid to local roads should be for the purpose of encouraging their improvement as feeders to the market lines of more general use.

As a tentative plan, therefore, it is suggested that the Province be prepared to provide $250,000 annually for three years, which is about twenty per cent. of two mills on the total assessment of about $604,000,000, or between fifteen and twenty per cent. of the present cash expenditure by townships on their roads.

Proposed Aid for Township Roads.

The apportionment of the aid might be effected in various ways. One would be to make it on basis of population; another would be to make it on the basis of assessment. A third, which would be of special benefit to the weaker municipalities, would be to apportion the grant somewhat as follows:

$50,000 to be distributed proportionally on a basis of assessment.
$50,000 to be distributed proportionally on a basis of population.
$150,000 to be distributed proportionally on a basis of area.

A plan of assistance which has been suggested is that short-term loans without interest might be granted to townships by the Government for road purposes. Difficulties have occurred in the past history of the Province through the adoption of a policy of lending to municipalities, but Your Commissioners believe that much good might be effected in case repayment of the loans can be fully safeguarded.

In each case the grant should depend upon the observance of certain conditions, such as—

(1) Each township should spend at least four dollars on its township roads for every dollar to be contributed by the Government.
(2) Proper drainage should be installed for each stretch of roadway aided.
(3) Statute labour should be abolished or commuted.
(4) The roads should be dragged.
(5) A proper township road organization should be established.

The establishment of an efficient organization is vital, and the most essential feature of such an organization is one township foreman in charge of road work displacing all other pathmasters and commissioners and retained as permanently as a township clerk or treasurer.

Little progress can be expected from township expenditure until it is put in charge of permanent road foremen, who, by their growing experience and constant attention, can bring system, uniformity, and continuity into the work.

In addition, therefore, to the actual improvement that would be accomplished by the expenditures suggested, it is felt that the educational value of the methods of road-building upon which the Province could insist would be great, and that once the value of such methods could in this practical way be exemplified in a community, there would be little desire to return to the less effective methods at present generally in use.

VI.

Co-operation and Permanent Construction Necessary

Your Commissioners, in making the foregoing classification, have been guided by the belief that it is not the function of a central government to do for the individual what he can do for himself, nor for a group of citizens what they can, with proper organization, do for themselves. But, on the other hand, it is in the highest degree desirable, by suitable legislation, to provide each group of citizens with suitable plans for co-operation; to stimulate their efforts on occasion with a degree of temporary financial aid; and in cases of necessity only, do for them, financially or otherwise, what they are unable to do for themselves.

Broadly, it is the general experience of all countries that roads of local traffic only lightly travelled, can be managed and financed by the local community alone; the function of a central government being, by well-advised legislation, to provide effective means of local co-operation, with Government assistance only as a measure for stimulating and focusing local effort in the early stages of a country's development, and as an educative step.

On the other hand, roads which carry traffic from a considerable area (on which unites the traffic of numerous local roads, serving a township or group of townships) enter a field of construction which demands large outlay, scope of organization, and continuity of effort beyond the ability of local or municipal organization alone to carry out. This has been the experience of every country which has attained a system of good roads; and to the work of building and maintaining roads of more than local traffic, the control and financial co-operation of the central government is in all cases being extended. Great Britain, France, Germany, the United States, owe their good roads, where they exist or are being built, to the active co-operation of their central governments. Equitable distribution of cost, an adequate scheme of finance, representation in expenditure, technical efficiency and business management all demand the grouping of roads according to a suitable classification. For this reason Your Commissioners have broadly divided the roads into township roads, or those of local traffic; and county roads, those which carry united traffic, and to which the co-operation of the Provincial Government should be more permanently extended.

The maintenance of the well-built roads in particular demands that they should be grouped under counties, rather than left with the local roads under township management. Otherwise expensive roads, after being built, are apt to be starved and allowed to fall into neglect, in order that the local roads may be improved. When a main road has been built, the tendency is for residents on other roads to say to their township council: "Don't spend another cent on that good road until my road is in equally good condition." Many old toll roads of the Province, formerly good, have been permitted to degenerate after passing to township control, from this cause.

The classification of roads and their allotment for control to separate bodies may be justified on other grounds, such as the principle of "division of labour": the need for a starting point on which to focus a limited degree of energy; or the cost of machinery and efficient superintendence, which townships could not reasonably provide.

Your Commissioners have already stated that the plan of permanent roads which it is felt the Province would be justified at this time in embarking upon, would involve an expenditure on such roads of about $30,000,000. The highway development, as outlined, could not be prosecuted with vigour unless future revenues are anticipated by the issue of bonds. The amounts to be ultimately provided by the different interests might be as follows:

By the Province (including revenue from motor fees)	$12,000,000
By the counties	12,000,000
By the cities	6,000,000
	$30,000,000

These obligations, it must be repeated, would be incurred gradually over a period of, say, fifteen years, and the full amount would not be incurred until some time about 1930.

The first principle in connection with road expenditures is that money secured by bond issues should only be put into permanent roads. The future should not be called upon to pay for the present, unless the present creates something that will be useful to the future. The maintenance of permanent roads is made necessary through the wear and tear of the present generation: hence that burden should be met by the users. As bond issues must eventually be redeemed, and as the roads will wear out and call for renewal from time to time, the bonds should not run for a longer period than the natural life of the road with proper maintenance. It is believed, therefore, that the bond should preferably be redeemed within twenty years, and should not exceed thirty years.

Maintenance would become increasingly heavy as stretch after stretch of standard roadway came into existence; from the moment a permanent road is constructed, a properly organized system of repair and upkeep must be applied to it if the first expense is not to be wasted and the project to issue in disappointment.

An intelligent system of records and cost-keeping is a basic requirement in an undertaking such as road construction and maintenance, for the guidance of those in charge of the work, as well as for the information of the public who supply the funds. Economy of expenditure, and public confidence and support will be greatly aided by adequate records of work done, with a corresponding and lucid statement of expenditure. Where Provincial aid is granted, such records are necessary to determine the sum properly payable by the Government. Uniformity of system should also be required. To these ends, the statistics of road construction and expenditure should be guided by the Highways Department of the Province.

VII.

Your Commissioners believe that the construction of a system of roads in Ontario should be regarded by the Provincial Government as a single great work,

County Roads to form a Provincial System.

even though in the early years it appears as a series of detached sections. In order that these sections may develop in time into a harmonious whole, it seems not only necessary that expenditures for all permanent roads should have the approval of the Provincial Highways Department, but that it should have full rights of inspection of the work during its progress as well.

Another matter which deserves attention is that the law should provide a penalty for the diversion of moneys raised by debenture issues from the purpose for which raised—permanent road construction.

Township Bridges.

The attention of Your Commissioners has been directed to cases of townships which have an exceptional number of expensive bridges to build and maintain. Owing to large rivers or numerous small watercourses, some townships have presented the claim that they are, from a cause which they cannot control, unduly burdened, or faced with an expenditure which they cannot reasonably meet, and that the cost should in part be undertaken by the Province, or distributed over a wider area than the township alone. The matter is one upon which Your Commissioners have not, in the short period of their work, had opportunity to obtain data, but would commend the matter for consideration.

Main Roads through Villages.

A number of villages throughout the Province have a very small population and assessment in proportion to their area and road mileage. It is suggested that the Highways Department should be given authority to deal specially with such cases, in order that the construction of main roads through them may be facilitated.

Municipal Elections.

Your Commissioners are of the opinion that annual municipal elections, and a one-year term of office for municipal councillors, constitute features which do not tend to efficiency or progress in the management of roads, in that greater permanency is desirable. In England, councillors are elected for a term of three years; in Nova Scotia, Quebec, and a number of States, the term is for two years. In Ontario, municipalities have the power to adopt a two-year term, but in no case has the change been made. The term of office for municipal councillors is an arbitrary matter and should be guided by practical considerations rather than by custom or limitations of the calendar. In creating greater permanency of road management, a term of at least two years would be of advantage; but should public opinion not at the present time justify the longer term, Your Commissioners would suggest as a favourable alternative, the proposal of the Executive Committee of the Ontario Good Roads Association, that there be specified designation of each candidate for nomination and election purposes—as reeve, deputy reeve, first, second, or third councillor, as the case may be—a method which would not involve the uncertainty and expense of an election for all, in case only one councillor was opposed.

VIII.

Administration of Highways Department.

A highly important aspect of the good roads movement is the administration of the service. The United States are doing a great deal in the way of highway improvement. In that country the pendulum appears to have swung over to the side of public services being performed by commissioners, and the minds of the American people seem to have fastened with especial tenacity upon the idea of having road departments controlled in

this manner. As a rule, the State Road Commissions consist of three members, though in New York quite recently the earlier commission of three was replaced by one such officer.

Occasionally the suggestion is advanced in this country that the American example be followed and the road service be committed to a commission. The American system separates legislative and executive authority, whereas in Canada the British system of government prevails, and the essence of this is the responsibility of a Minister for the spending of the taxes which are paid by the people, and the administering of the resources possessed by them. The American system of divided responsibility does not seem suitable for engrafting upon our institutions. Inasmuch as the Minister is responsible to the people through their Legislature for the expenditure of their taxes, he could not be expected to hand over to others his responsibility of directing that expenditure.

In fact, the commissioners at the head of road departments in the United States, with possibly one or two exceptions, are appointed by the Governor for periods not exceeding five years, and they are responsible to the Legislature for the expenditure of moneys on roads. Your Commissioners see no sound reason for departing from the system peculiar to the institutions of this country, under which the Road Department should have, as already noted, a political head as well as a permanent one—a Deputy, also a Chief Engineer. To add to that service three commissioners, making in all five highly paid men in addition to the Minister, would overload the head of the service. Moreover, many of the services which these salaried commissioners should undertake would be performed equally well by less highly paid officials more strictly under control.

Advisory Commission.

It may, however, be possible to find a place in our system for a commission, not of an executive, but of a strictly advisory nature. In the Eastern States of the American Union, men of means now are beginning to realize that they occupy positions of special responsibility in the commonwealth. The ordinary routine work of politics, with its concomitants of organization, canvassing, public speaking and electioneering, often does not appeal to these men, and they are therefore debarred from serving the public in the traditional way of seeking seats in the Legislature; yet they are willing to do the State service in some other way calling for less sacrifice of privacy and smaller demands upon their time. For men of this type the appointive commission affords an opening for service to the community; what they often possess is executive ability and administrative skill, and these they can give to the public without participating in the conflicts which attend the shaping of general policy in the Legislature.

Could not the Province of Ontario, in a somewhat similar way, get valuable work out of certain of her citizens who are endowed with qualities useful for the public service, but who have held aloof from the incidents of party strife? If men of this class could be induced to act as an Advisory Commission, valuable public service might be secured.

Then with a deputy head, a chief engineer, and such a commission at one end of the organization, and technical road-builders at the other, such intervening machinery as would be necessary could be built in as the work progressed.

Your Commissioners, in putting forward this suggestion, keep clearly in mind the fact that the spending of public money must take place in conformity with two cardinal principles of the British system of government:

(1) The general policy, using this term in its broadest signification, must be determined by the elected representatives of the people.

(2) The administration of the work must proceed by the authority and under the close direction of a Minister, answerable to the elected representatives of the people.

Your Commissioners conceive that the field exists within which, without contravening these principles, the ability of men of the type already mentioned may find scope. For one thing, apart from the general policy to be pursued, there is what may be termed a technical policy. The decision that better roads shall be built is proper for the Legislature to form; the decision that they shall conform to certain standards of gradients, curvature, solidity of construction, etc., or they shall serve centres of population according to specific business principles, is one which the Legislature will be well advised to leave to technical experts. The responsibility for these decisions on technical policy must be borne by the Minister, who must seek technical advice. Could not this advice, in its large aspects, be given by men of large affairs, willing to give some portion of their time and energy to the promotion of the public good?

Another consideration is that such a body should be of influence in composing the numerous differences of opinion which are likely to arise in the practical working out of the policy proposed. For example, it is suggested in this report that a city may advantageously contribute to the construction and upkeep of the suburban roads in the belt immediately surrounding it. If this is adopted, keen bargaining is to be expected as regards the width of the belt within which this assistance is to apply, as regards the roads to be improved, and on other points of detail, and it is conceivable that an Advisory Commission of the type suggested might be of service in mediating between the several parties.

Your Commission accordingly would suggest that it may be practicable for the Province to obtain the services of an unpaid Advisory Commission, to consult with the Minister and the senior officers on questions which they have ventured to describe as having to do with technical policy. The period of appointment might be five years. Your Commissioners repeat that under the system they have in mind, full authority will rest with the Minister, and full responsibility would be borne by him; their point is that in coming to decisions by which he must stand or fall, he might be greatly aided by the advice of competent men of large affairs, pledged to study the problems arising and in a position to be disinterested; and that certain aspects of the daily work of the Department would be facilitated.

Canada has in recent years enabled many men to become independent, and the time is here when such men should be prepared to realize their responsibilities to the State, as is now being done by men of means in the United States. It should only be necessary to draw attention to this matter in a proper spirit to make men see their undoubted duty to the State. It should be possible to find three such men—broad-minded men—who would accept the position as an honorary one, with no salary. To be prepared to give up five years of their lives to such a work, starting out with the ambition to aid the Government in getting Ontario established, well on towards placing her in the very forefront, amongst the most advanced road-builders on this continent, is an inspiring task for the biggest kind of large-minded men. What public service is there to equal it?

And when it is remembered that the problem is not one of supplying a fixed population with suitable roads, but may also be made a prominent factor in the further settlement of the Province, and fully as necessary in that respect as the

supplying the country with railways, it at once shows the opportunity presented for men of the calibre of mind and energy of our most successful railway constructors.

IX.

The money for the roads must come from the people, either directly or indirectly. The control of the construction and maintenance of the roads must rest with public servants—with officers of the Province, with officers of the local governing body, or partly with one and partly with the other.

Control of Roads.

Centralized control by Provincial officers offers certain advantages; in particular it would guarantee uniformity of work, and it probably would promote economy and efficiency. It also offers certain disadvantages, and of these perhaps the chief is that it would tempt the people to consider themselves absolved from responsibility for the care of their roads. The guarantee of democratic institutions in North America is not only the willingness but the desire of the people to attend to their own business, and not to become automatons, almost every act of whom is regulated by some legislative enactment. Furthermore, the nearer the people are brought to the actual control of their own property, the roads, the nearer the personal ownership feature becomes, and that means greater care. Let the people divest themselves of the management and control of their own property, handing it over to a central authority, then it becomes, to some extent, a matter of competition between that authority and the people—the one to create the utility to withstand the aggressive use of the other.

Balancing the two sets of considerations, it seems a sound policy, especially in the earlier periods of road development in the vast Province of Ontario, with its limited population, to have a central Road Department working in harmony with local authorities, throwing as far as possible on the latter the responsibility of producing and maintaining roads necessary for the traffic needs of the people.

To this matter of promoting, of encouraging, of stimulating the interest of the people, Your Commissioners attach great importance. Apart from the course of throwing the responsibility upon them—which they agree is the great means of arousing attention—there are lesser means of promoting interest. Efforts might well be made to awake and develop a spirit of competition among the counties; the Provincial Road Department might offer a few prizes annually for the best suggestions for the improvement and control of roads. The Government might offer yearly a banner to the county making most progress in roadwork, and the names of the successful county and those responsible for its work might be inscribed in some public place—say on some suitable structure in the grounds of the Toronto National Exhibition. In short, great pains should be taken to get those using the roads into the habit of thinking of them, so that there would result a pressure of public opinion, an independent supervision of the work by the people themselves. Too often it is exceedingly difficult to get the public to take an interest in what is esentially its own business; it should be the constant aim of all road organizations to combat this apathy and to devise methods of evoking interest. The more successful such institutions are in that respect, the greater will be the willingness of the people to expend money for road development, and the less the opportunities become for wasteful expenditure.

X.

Your Commissioners desire now to revert to one of their earlier observations, regarding the part which the cities should play in the movement for better roads. The opinion frequently is advanced in the cities that the provision and support of good roads should fall upon the farmer, inasmuch as he must use them to market his products. The farmer, however, is fully justified in maintaining that the cities are equally interested in the roads over which their food supplies reach them. In point of fact, the city and country are necessary to each other, with the advantage somewhat on the farmer's side; for while he could manage without the city, the city could not exist without him.

Cities and Suburban Roads.

A number of aspects of the relations of the two are dealt with at some length in the appendices to this report. It suffices here to draw attention to the existence about the city of a belt of rural territory which is knit to it in the closest fashion. Much of the city's food is grown in this belt; more would be if the means of communication were better. Sundry industries, due to the presence of the city, are prosecuted in this area. The residents for some miles out are valuable customers of the city's shops. In every way the city stands to gain by the equipping of this belt with a system of roads able to carry a heavy traffic with speed and economy. The speed of the motor 'bus and motor truck would extend the city's influence; that is, the area from which it could draw food and direct trade. Opportunities would be afforded for a specially beneficial development, the rapid moving of workers out into the countryside after their daily task is over. It is understood that in Belgium one-third of the industrial workers live outside of the towns, cultivating small holdings of land, under conditions of health which surpass these of residence in the crowded streets. From the standpoint of the city's food supply alone the improvement of the roads is of great importance to the town-dwellers.

Economically speaking, distances are measured by time, and if men trespass too much on the early morning hours in order to reach distant markets, nature makes her claim on them later on. If the constant, regular supply to city markets is limited to points, say, two hours therefrom, it would mean leaving the farm at six a.m. in order to be on the market stand at eight a.m. It is easy to realize, therefore, that by cheap motors and good roads, the supply area can be greatly enlarged, as compared with the present districts, in which supplies are sent into town by horse-drawn vehicles on indifferent roads. Further, the widening of the belt means enhancing the profits per acre, to the advantage of the farmer.

Again, the countryside has suffered for several decades from certain inevitable developments. Forty years ago a considerable amount of industrial work was carried on in nearly every small town, in nearly every village, and indeed in many rural communities too small to aspire to the name and style of village. This caused a wholesome diversion of industry, increased the interest of country life, and was in most respects a beneficial social influence. The march of progress has swept that state of things away. The tendency of the age is towards centralization. Those small industries, which mean much to the small towns, have been absorbed into those operating in larger centres. The countryside must specialize in farming. Why then should cities, to a certain extent built up by rural districts, which have lost taxable property to those cities, not be prepared to contribute to the road system for the Province?

It is, in short, the contention of Your Commissioners that the roads of this suburban belt should be brought up to a high standard, suited for heavy traffic, some of it carried on at considerable speed, and that the principal beneficiary

Dundas Street—Applying Tar, to prevent dust and preserve the road surface. One-half gallon per square yard.

Dundas Street, near Toronto. Carpeted with tar and fine gravel.

would be the city. On whom should the burden fall? The county and the township already spend as much upon these highways as strictly county and township purposes warrant; the wear and tear is inflicted by city people and by others whose residence in the suburban area is due to the propinquity of the city. These and other considerations are responsible for the conclusions reached by Your Commissioners and expressed in a previous classification.

XI.

Interurban or Main Highways.

In dealing with interurban roads it is necessary to glance at one aspect of the problem created by the motor. The greatest asset of some European countries is their scenery; it attracts tourists, and the money they spend is of great importance to the community. Ontario possesses exceedingly attractive districts, especially in the Northern sections, where the climate in summer is agreeable and invigorating. Already our neighbours to the South have begun to flock to these resorts, and this trade has become important to several districts of the Province. Bearing in mind the tremendous wealth possessed by our neighbours, and the fact that even now there is one automobile in the United States for each eighty of its population, and that the tendency to reach such resorts by motor is increasing, it is not difficult to realize that with a system of main arteries penetrating the country, and more especially leading into the Northern areas of the Province, a still more important tourist traffic would be developed and would justify the construction of such roads when the Province reaches a position to be able to finance them. This traffic is of little benefit to the people of the intervening districts traversed; it throngs the roads, and there is a tendency to over-rapid driving, with its accompanying nuisances, of which the dust evil is but one. However, the traffic is of great value to the summer resort region, which would be the goal of most of these hurrying wayfarers, and the interests of Muskoka, the Georgian Bay, and the Trent region must be considered as well as those of the more strictly farming districts.

This traffic may be regarded as the most extreme which interurban travel is likely to assume, but there are many degrees of it. Your Commissioners feel called upon to refer to those roads within the interior lake districts necessary for tourist purposes, as the matter was brought to their attention by residents of those districts. Still they are free to confess that the resources of the Province should first be directed to the upbuilding of the roads necessary for the agricultural needs of the people.

Along the interurban roads many persons will pass who do not live in the municipalities in which they are situated. This is perfectly natural; from time immemorial, the King's highway has been for the use of the traveller, regardless of his residence. It is necessary, of course, to see that the burdens of constructing and maintaining such a road are equitably adjusted, so as not to impose an undue proportion of them on the people of the locality. Indeed, if measures of this sort are not taken, the situation will work itself out, and disadvantageously to all concerned; for the motorists will search out and appropriate to their use the best stretches, and there will be motor routes which at once will give dissatisfaction to the motorists and inflict a sense of injury upon the farmers and ratepayers along them.

At the same time, a road which constitutes an artery of this sort is not exclusively an affair for the traveller from a distance. It is a series of links—market roads necessary for the needs of local people, and it will be the strictly local

road for those who dwell along it. In short, it discharges functions at once local, Provincial, and in some cases even National, and in consequence it demands assistance from more than local administrations.

The road problem thus is part of the problem of the future development of Ontario. The needs of the future must be anticipated for a few years, at all events. Before it is feasible for the Highways Department and the country authorities to decide what function a given stretch of road is to discharge, a very complete traffic census should be taken to show the agricultural development of the territory which these roads tap. That work—the traffic census—has been begun by Your Commissioners, but it should be enlarged upon this coming summer and done more thoroughly, in order to aid in determining a proper classification of roads. Other factors in deciding the question of classification are area of county, population, and productivity per acre, including, as has already been pointed out, the growth factor within, say, the next decade.

This census will further throw light upon the proportions in which each stretch of road is used for local, for non-local, for interurban, and for suburban purposes.

XII.

Taxation of Motor Vehicles.

The solution of the good roads problem would be very much simplified indeed if the Provincial aid for permanent roads could be obtained by direct taxation, as in various States of the American Union. There, the people, or their legislators, declare for or against a specified amount being invested in roads by the State. This direct levy, if other funds are not available, is annually made on all municipalities, urban and rural alike, to meet the necessary payments. The result of this is that in the State of New York, which has authorized an expenditure on permanent roads, since 1905, of $100,000,000, the cities and towns will have to contribute eighty-five per cent. of that amount.

Taxation of motors often is suggested. Your Commissioners recognize the justice of the suggestion to this extent, that they recognize the automobile as a form of wealth which is proper for taxation, and agree that it is fair to appropriate the amount raised for road improvement. They recommend the following scheme of taxation:

(1) Automobile Schedule:

Horsepower (Brake).	Registration Fee.
Up to 20	$10 00 per car
21 to 30	50 per h. p.
31 to 40	60 per h. p.
41 to 56	75 per h. p.
Over 56	1 00 per h. p.

(2) Commercial Truck Schedule:	
2 tons and less	10 00 per car
Over 2 tons	5 00 per ton
(3) Motor Cycles	4 00
(4) Chauffeurs	4 00
(5) Foreign Tourists	10 00 (uniformly)
(6) Foreign Trucks	10 00 (uniformly)

(Items (5) and (6) to be subject to reciprocal arrangements.)

The above figures applied to Ontario motors, etc., would yield about. $400,000

The schedule of New York applied to Ontario motors, items (1) and (2) only, would yield about	$101,340
The schedule of Massachusetts, do	163,976
The schedule of New Hampshire, do	658,115
The schedule of Great Britain, do	658,115
The schedule of Italy, do	844,129

(It is understood that the New York fees may be increased.)

In proposing these rates of taxation, Your Commissioners decline to take the view that the motor tax should be levied as a punitive measure, on the ground that these machines are the chief agency in the destruction of the roads. For one reason, horse-drawn vehicles also use the roads, and in some cases contribute the sort of wear which causes the motors to be destructive; there are certain types of roads which would give fair satisfaction if their use were confined to motors, but which deteriorate rapidly when the narrow-tired wagon abrades their surface in such a way as to give the clutching wheel of the motor car the excavating effect which the road-builders dread. For another, if the principle of grading the taxation according to the individual's use of the roads were accepted, it might be urged that the contributors of taxes to the upkeep of schools should be those whose children attend, and those alone, and on a per capita basis, regardless of the varying ability of the taxpayers to contribute.

It will be observed that it is proposed the tax be graduated according to the capacity of the car in horse power and speed. It appears unfair to tax the small "runabout" motor as heavily as the sixty horse power touring car, which, if allowed to tear over the road at twenty-five miles an hour and more, will do very great damage to the road. Indeed, it seems not unreasonable that there should be a light tax placed on heavy wagons having narrow-tired wheels when used on permanent roads. Your Commissioners realize that it would be unfair to demand from farmers such a tax without giving them a few years within which to adopt wide and less destructive tires.

A very interesting analysis of the motors in use in Ontario will be found in the appendix. During the year ending 31st December last, there were licensed 16,458 automobiles—medical men having 1,139. The list of motors owned in villages and rural districts number 3,161, of which 966 were in the possession of farmers.

XIII.

Equality in Assessment and Taxation Necessary.

Much attention has been paid in recent years to the taxation of railways. The desire to evade taxation—it is understood—was carried by corporations in the United States to lengths which aroused much public irritation, and provoked sharp measures designed to oblige them to bear their share of the public burdens. Of late a reaction seems to have set in and there are many in that country who now think that the railway corporations are being unduly pressed, alike as regards the rights of their shareholders and as regards the interests of the public: it is apprehended in that country that the public utilities may deteriorate if the State does not assume a more friendly attitude towards the corporations. The opinion is freely expressed that corporations have brought it on themselves in their efforts to avoid paying a fair share of the tax burden, and corporations in Canada, it would seem, would be well advised to forestall the possibility of any such movement in this country by showing a willingness to have their property properly taxed, and by otherwise aiding the tax officers in their work.

An examination was made of recent sales in certain registry offices in the Province, and then the assessed values of these properties were obtained from municipal rolls. It was found that the ratio of assessment to sale figures varied from six to ninety-six per cent. The good roads are to lace together all the townships within the various counties; the people are to be taxed for those roads; the amount of the taxation will depend upon the assessment; and if the people within those townships are to be fairly and equitably taxed for such purposes, there should be some method of creating uniform assessments.

Your Commissioners understand that certain representations as to assessment methods have been put forward by the Association of Ontario Municipalities. These representations Your Commissioners have not seen, and they by no means wish to run counter to them. In the absence of information on the subject, they venture to observe that the assessors are appointed annually. Each does his valuing independently of what is being done in the adjoining municipality. The suggestion is advanced, subject to the qualification just made, that while the assessment roll might be corrected annually, the assessing should be done with thoroughness every five years, instead of annually in the haphazard way which appears to prevail in some municipalities under the existing method. If this proposal to have the assessment made every five years is accepted, a further suggestion is that there should be a district or county assessor, and that the assessors in each municipality in the county or division shall work under instructions issued through him. For anyone to come forward, as has been done, and state that a certain township under the existing method was assessed thirty mills on the dollar is meaningless, as that rate may only be on an assessment of possibly twenty-five or fifty per cent. of the actual value.

The better roads movement, in short, begins with the assessment roll and ends with increased facilities for intercommunication between the producer and the consumer, with the result of greater efficiency in the transaction of the business of the community. Thus, the assessment roll plays a most important part in good roads.

XIV.

Summary of Recommendations.

Your Commissioners desire to summarize briefly some of their recommendations:

Control.

1. The committing of the actual control and management of the roads, so far as possible, to local bodies—the county councils, or commissions appointed by them, boards of trustees, etc.

Finance.

2. The blocking out of a definite amount of work to be begun in 1915, and to be completed about 1930. Cities should contribute at least to the construction and upkeep of the roads in their immediate neighbourhood. The permanent construction work should be regarded as a capital expenditure, and should be financed by bond issues designed to reach by 1930 a total sum of about $30,000,000, apportioned as follows:

To the Province, (including the capitalization of some of the revenue from motor fees)	$12,000,000
To the counties	12,000,000
To the cities	6,000,000

Maintenance. 3. The provision for proper maintenance for every mile of permanent road work, the funds for this to be obtained from current revenues.

Township Roads. 4. The devoting of special attention to the improvement of township roads.

Tax on Motor Vehicles. 5. The putting of taxation of motor vehicles on a systematic basis, which Your Commissioners estimate would produce about $400,000 in the earlier years.

Central Highways Department. 6. The development of a central Highways Department under the headship of a Minister of the Crown, with, as its principal permanent officials, a Deputy Minister and a Chief Engineer, and in addition an unpaid Advisory Commision of men with a genius for accomplishing big things.

In view of the impossibility of installing a new plan of road development as outlined in this report before 1915, Your Commissioners believe that:

Work on County Roads During 1914. 1. Counties now operating under the Highway Improvement Act should be encouraged to continue as usual their road work this coming summer, and that the regulations under the Act should be made as elastic as possible so as to allow the other counties to begin work and thereby take advantage of the aid thereunder.

2. There should be created a sufficient organization to carry on this summer the following investigations:

(*a*) A motor survey of principal roads to determine their physical condition.

Information Wanted. (*b*) A traffic census to determine the present road needs of the Province.

(*c*) An investigation of main township road conditions.

(*d*) An investigation of the Hamilton-Toronto, and Ottawa-St. Lawrence Roads, obtaining plans and specifications of same.

(*e*) An investigation designed to outline a plan of market roads for counties not now operating under the Highway Improvement Act.

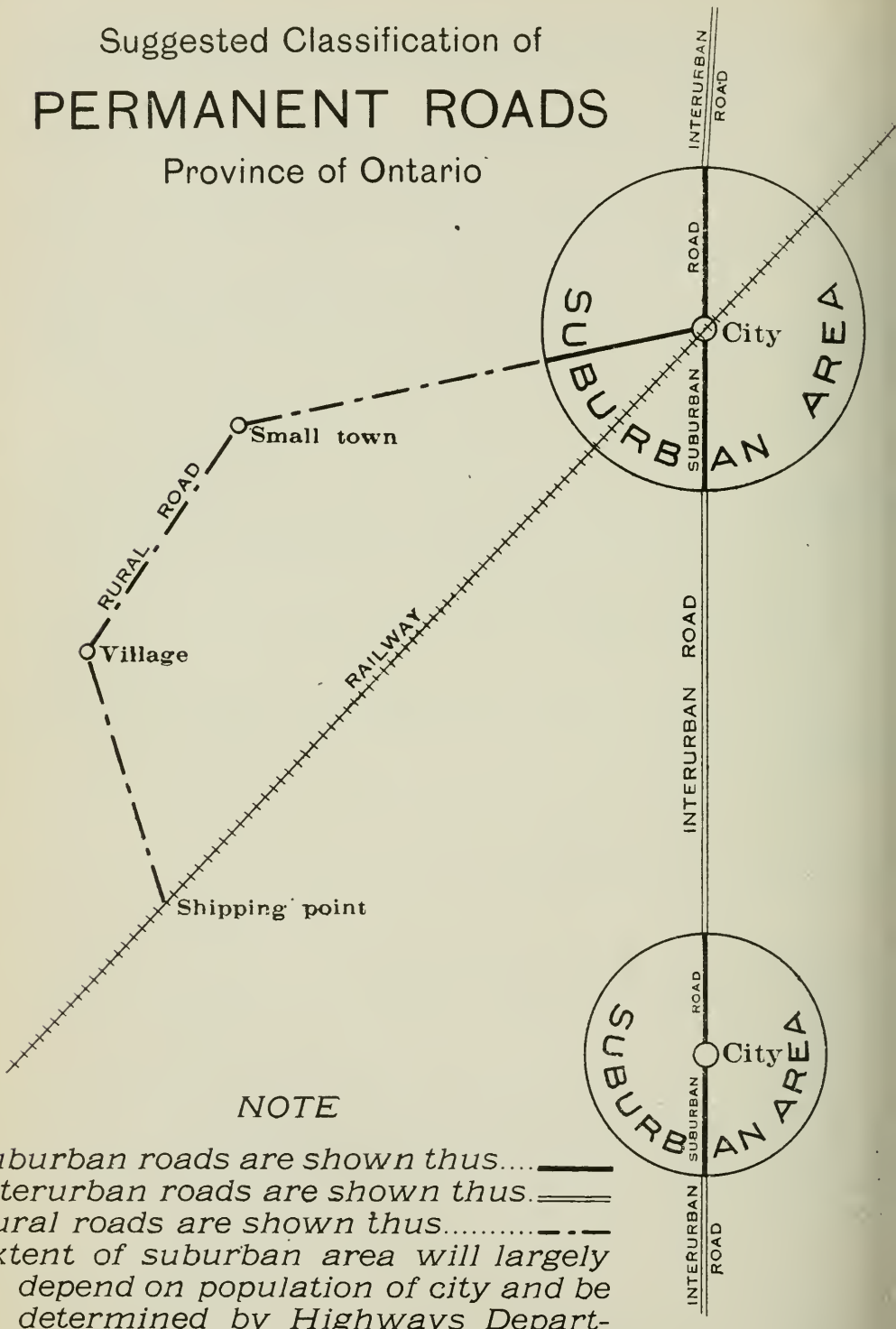
(*f*) A determination of suburban areas about principal centres.

Finally, Your Commissioners wish gratefully to acknowledge the courtesies extended them by the Highway Commissioners of those Provinces and States to which they appealed for information. A vast amount of material has been freely furnished, all of which is on file for future use by the Provincial highway organization.

Further, Your Commissioners wish to acknowledge their deep sense of gratitude to the Ontario Good Roads Association, also many gentlemen interested in Provincial road problems, and to add that if Your Commissioners have in any way failed in their efforts in dealing with this vast and important subject, the fault is their own entirely, as Your Commissioners must acknowledge that Your Honour's advisers facilitated the efforts of the undersigned in every possible way.

(Signed) C. A. MAGRATH.
W. A. McLEAN.
A. M. RANKIN.

Toronto, 31st March, 1914.



NOTE

Suburban roads are shown thus....
Interurban roads are shown thus.
Rural roads are shown thus.....
Extent of suburban area will largely depend on population of city and be determined by Highways Department after having received views of County and City.

MEMORANDUM TO ACCOMPANY DIAGRAM SHOWING SUGGESTED CLASSIFICATION OF PERMANENT ROADS.

The important roads of each county carry about 80 per cent. of the traffic, and amount to about 15 per cent. of the total mileage of all roads in the country.

Thus important roads called County Roads have three functions to perform, and are consequently divided into three grades:—

Suburban shown on diagram by solid black line.
Interurban shown on diagram by double line.
Rural shown on diagram by broken line.

All three classes are used by the farmers of the County, therefore all have a county function to perform and all should receive support from the County. The suburban road in addition has certain city functions, and the interurban has its additional urban functions outside of the suburban area as well as certain provincial, and in some cases, national services to render and is largely used by motors. These functions therefore call for support as follows:—

Rural roads—County and Provincial aid.
Suburban—County, City and Provincial aid.
Interurban roads—County, Province expending motor fees and Provincial aid.

Hence the following division has been suggested:—

Classification	Construction			Maintenance		
	County.	City.	Province.	County.	City.	Province.
	%	%	%	%	%	%
Rural	60	.....	40	60	.....	40
Suburban*	30	30	40	33⅓	33⅓	33⅓
Interurban†	33⅓	.....	66⅔	60	.....	40

* If cost exceeds $10,000 per mile, excess to be met by Local Improvement Tax.

† To cost not exceeding $12,000 per mile, revenue from motor fees to supply one-half of Provincial aid.

APPENDICES

APPENDIX No. 1

(a) Agricultural Interests

Your Commissioners desire now to direct attention to the importance of the agricultural interest. The country has arrived at a point in its development when much depends upon the work of the farmers during the next few years. The significance of the present juncture is made clear by Sir George Paish, editor of the London *Statist,* in his contention that Canada must look to her farming and mining operations to redeem her pledges to the investors of the world. In reference to railway development, after stating his belief that the constructive work upon transportation and industrial equipment has been practically completed for a time, he writes as follows:

"It is evident that the railway machinery created to take care of the production of the country is sufficient to deal with at least twice, if not three times, the existing output, and it is obvious that the burden of interest upon the immense amount of capital supplied will be a heavy one until the productive power of the country is greatly increased. I am convinced that every possible effort will be made by all concerned—the Canadian Government, the Provincial Governments, the municipalities, the great railway companies, bankers, traders and others as well as by British investors—to increase rapidly the agricultural and mineral output of the country upon which the welfare of the Canadian people, both individually and collectively absolutely depends, and that the effect of their concerted effort will be so great that the country will carry with safety a burden of interest which might otherwise overtax its strength. It is, however, of the greatest possible importance that the work of directly increasing the productive power of the country by placing a larger proportion of the population upon the land and in the mines should be carried out with the least possible delay."

In other words, in the years which are coming upon us, the farmer and the miner must be our reliance; to the two might be added the lumberman. While all three must play their part, the farmer's is by far the largest share of the work. The strictly rural population of the settled portions of the Province stood in 1911 at 1,024,000 as against 1,271,000 in the urban municipalities so that the farmers constitute by far the most numerous single element in the community. In the aggregate they have the largest capital investment in the Province; the last census shows the following comparison:

Capital investment in agriculture (Ontario only)	$1,283,000,000
Capital investment in manufactures and industries (Dominion of Canada)	1,247,500,000
Agriculture exceeds by	$35,500,000

Still more is the farmer the great wealth producer of the Province; the census returns for Ontario show the three great industries ranking thus in the matter of annual production:

Agriculture	$175,000,000
Mining	39,000,000
Lumbering	30,000,000

It has been demonstrated that the application to all the farms of the Province of the methods employed on the best ten per cent. of them would double the value of its agricultural production. How great would be the prosperity of Ontario if her agricultural production rose to $350,000,000. In no other department of the life of the community is any such increase of output of wealth even remotely possible within a reasonable period. General conditions are necessary to such a result, and they range from willingness on the part of the farmer to adopt the methods actually in use by some of their number to the provision by the people of the equipment which is necessary. Good roads are part of the equipment supplied to the individual farmer by the community. The man whose farm is separated from its market by several miles of difficult roadway wastes part of his time, his energy and his capital on unnecessary effort in transportation: he is driven into the less productive kinds of farming, and he loses part of the proper returns, even from his unproductive type of farming. Good roads will not of themselves increase production and enhance values, but they give the farmer a chance to do these things, and they are an indispensable preliminary to the process of getting more from the land.

Of course certain qualifications must be borne in mind in considering the importance of the farmer's place in the wealth production of the community. The farmer's capital, enormous in the aggregate, presents one or two characteristics which govern and indeed limit its use. For the most part it is fixed; little of it is liquid enough to be applied promptly upon new enterprises. While the sum of it is very large, there are a great many persons to share it, so that no one farmer commands a very large amount. The farmers can do much if the effort required of each is moderate and if time is given; but the margin available for immediate outlay is narrow. Here the cities, with their great concentration of capital, and with their reserves of liquid capital, have an advantage when it comes to undertaking considerable enterprises whose fruit can only come in the future. Indeed, we may go further and say that this is one of the city's express functions in the community. If large commitments of capital are required, the city must bear its part.

At this point Your Commissioners must notice an argument which frequently is used with regard to highway development: the suggestion that the social development of the countryside is necessary for the purpose of rendering it a more pleasant place to live in, and so checking the movement from the farm to the city. They accept as proved and known to all the proposition that better roads will improve social conditions. It is obvious that good roads will aid in the rapid and effective installation of rural mail delivery. It is unnecessary to dwell upon the changes in conditions which will follow those interlaced improvements, the rural telephone, the parcel post, rural mail delivery, increased use of motors by farmers, and the good roads which make practicable all of these but the telephone. Fully conscious of these considerations, they abstain from doing

more than mention them, for they are convinced that the economic argument is the one to press. The farmer's social development may be left in his own hands without officious advice from outsiders; if he gets his share of the economic benefits which arise from his production, he may be trusted to use the proceeds for the social improvements which suit him best. Your Commissioners rest the case for good roads upon the farmer's economic importance in the Province. Good roads will enable him to increase his output, and the entire community will be benefited.

Let us look more closely at the relation between the city and the farmer. First of all there is the very plain fact that the farmer is a large consumer of manufactures which do much to maintain the cities. In the Dominion in 1911, the following articles which depend almost wholly upon the rural districts for their market were manufactured.

Material.	Value of Product.
Agricultural implements	$19,115,894 00
Axes and tools	1,841,143 00
Carriages and wagons	7,920,567 00
Carriage and wagon materials	2,865,618 00
Cream separators	632,256 00
Harness and saddlery	1,971,162 00
Incubators	154,550 00
Pumps and windmills	1,361,046 00
Seed cleaning and preparing	1,484,485 00
Whips	123,500 00
Wire fencing	2,170,844 00
	$39,641,065 00

And of course these give but the merest glimpse of the purchases by country from town. But this consideration only opens the subject. The city has a stake in agriculture in the matter of local trade or shopping, and in regard to its food supply. Around every city extends a belt of farming country which is in peculiarly intimate relations with it. Much of the food consumed in the city comes from that belt; the men who grow that food are customers of the city's merchants and swell its trade. These adjacent farmers, economically and even socially considered, tend to become citizens of the city rather than of the rural municipalities within which their houses are situated, and exceedingly important citizens in the eyes of bankers, merchants and business men generally. It is not easy to estimate the width of this belt within which relations are especially intimate, but under present conditions, Your Commissioners are disposed to regard it as about seven miles.

On the basis of the present average value per acre of farm produce in Ontario, the adoption of improved methods of production within the area bounded by a circle seven miles from the market centre would result in an increase in the value of agricultural products within that area amounting to over $1,400,000 annually. Such an increase would give a tremendous impetus to the activities of every business in the city. What centre would not do its utmost to secure the location within its bounds of an industry bringing $1,400,000 annually into the community? A city may have a variety of well-established manufacturing concerns, but unless it can also point to a well-developed adjacent agricultural industry, the products of which have been made easily available, it is lacking in a most important factor in its growth.

Of the two parties in these relations, the city has the most to gain. All movements designed to help the neighbouring farmers rebound upon the city, to its advantage. The growing of market produce, for example, in the vicinity of large centres of population is of tremendous importance to the people who live in them. It accordingly is to be considered whether a policy of urban municipal administration which omits to take account of the interests of the adjacent farming community is not negligent of one of the most important factors in the town's development. Of any industry in which it may take an interest, towards which it may contribute, or for which it may make a material sacrifice, the industry of agriculture, especially in the immediate neighbourhood of the city, has a preferred claim. Cities have practised the bonusing of other industries contributing in various degrees to their growth. They would do well to recognize the fact that the farmer is an integral part of their life, and to make the adjacent farming community one of their assets. A city which allows its administrative attention to extend no further than its immediate boundaries has not yet awakened to its own best interests.

In speaking before the Commission at their meeting on November 24th, 1913, Colonel W. N. Ponton, President of the Associated Boards of Trade for the Province, declared in regard to Belleville, "We are not only from the city. The Board of Trade has reached out to farmers, dairymen and fruit growers, and all are members. We have endeavoured to draw in the country and their interest, and in the administration of the work committed to the Boards of Trade, to share with the city the privilege of considering matters having regard to the development of the country, irrespective of politics."

Mr. John Elliott, President of the local Board of Trade, said, "We of the Belleville Board of Trade have discussed this matter a great deal. We feel the welfare of this city, to a large extent, depends on the avenues of trade furnished us by way of good roads, to enable our friends to come a distance of thirty miles to our market. The Belleville market is well known, one of the best in the Province. We have farmers coming here over thirty miles on Saturday mornings. We feel the welfare of the city is bound up in transportation. We require a greater amount of food to reduce the high cost of living in this city. We want to have the greatest good for the greatest number by giving us good roads, where we can give the farmers twenty-five or thirty-five miles from Belleville, an opportunity to market their product along the same lines as those who live within a radius of ten or twelve miles from the city."

(b) The City and Roads

All classes of people are deeply interested in good roads, as everything they consume and wear comes from the land and must pass over some piece of highway. A distinguished statesman in the United States has substantially stated, "You cannot increase the prosperity of the country as a whole without increasing its highway facilities." Highly productive farms can never be made profitable adjoining poor roads, and the first agency towards increasing the prosperity of the farmer is to create the cheapest outlet for his products to the market. Canadian statistics for 1912 indicate that one dollar will carry a ton of the average freight by railway one hundred and thirty miles, and on water, five hundred and fifteen miles. The former is the average of high grade and low grade traffic, car lot and less than car lot, long haul and short haul, while the latter is relatively a limited number of commodities, moving in large bulk, on long water hauls. As to the cost of haulage per ton by horse-drawn vehicles, there is some general understanding that on very ordinary roads, four miles is the limit for one dollar. It can hardly be disputed that a team will haul three tons easier on a hard smooth road, than one ton on a bad road.

But this is the twentieth century and the motor is here to stay. It, however, requires good roads; on them the motor will make twenty miles with a reasonable load as quickly as a team can cover six miles on good roads, or say three miles on poor ones. The "home market" of the farmer thereby may become enlarged to an extent he hardly realizes to-day. Give him a vehicle which can transport a load cheaply for twenty or thirty miles in the time now taken for ten, and you give him a choice of urban centres in which to do his marketing. Motors consequently will be a great factor in the development of the country, provided the roads are made suitable for them. The area of production of food stuffs will be increased, and the profits per acre increased to the farmers. In a very interesting investigation carried on by Clyde Lyndon King, Ph.D., for the Mayor of Philadelphia, in 1912, it was shown that the spread between what the farmer received for certain foodstuffs, and what the consumer paid, varied from sixty-seven per cent. to two hundred and sixty-five per cent. These investigations of course were only carried on locally.

In dealing with these figures, in an article on the cost of distributing food products which appeared in the Annals of the American Academy of Political and Social Science of July last, Dr. King, referring to "what these costs mean to the consumer and farmer," in part stated as follows:

"It is difficult for the imagination to grasp just what these costs of distributing farm produce mean in lower prices to farmers and higher prices to consumers. The consumers of New York City pay annually around $645,000,000 for food. This food costs at the terminal $350,000,000. That is to say, the people of New York City are paying over $150,000,000 each year to have their foodstuffs taken from the terminal to their kitchens. At a cost of fourteen cents per meal per person for all classes in Philadelphia, high and low, rich and poor, Philadelphia citizens are spending $225,000,000 every year for food. Of this amount they pay something less than $75,000,000 each year in cartage and delivery costs and in retailers' profits.

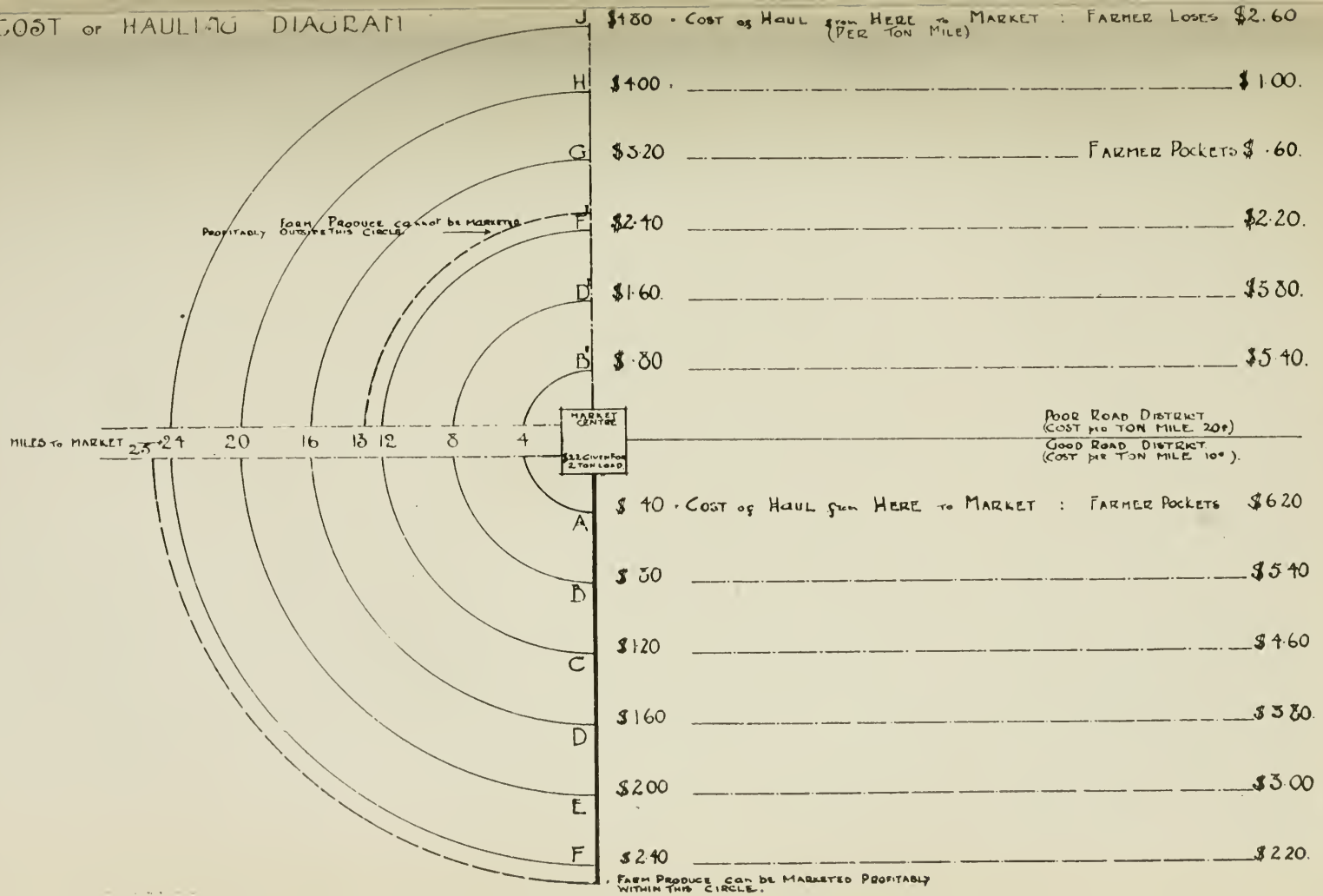
"Of the $146,000,000 paid annually by the people of New York City for milk, eggs, onions and potatoes, less than $50,000,000 was received by the men who raised these crops. For certain produce for which the eastern farmer last summer received $1.00, the Philadelphia consumer paid $2.35.

"Is it not needless to point out other results of this method of distributing food products? Is it not clear that the interests of every farmer and every consumer point to the necessity for developing a cheaper method of food distribution, whereby at least much of the handling and the profits of a few of the middlemen may be eliminated? All are interested in cheaper costs of food distribution. The farmer, is of course, because it means higher prices. The consumer is because that is his only hope for lower prices. But so is the city; and the labour employer."

Dr. King is responsible for the statement, "It is mainly in the development of direct shipments to relatively nearby markets that the farmer's returns can be increased and consumers' prices lowered." It is, however, not fair to charge all of the great spread, including transportation charges, as between producer and consumer to the middleman, as many are now doing when looking for the causes of the present cost of living. The residents of the cities, especially the property owners, are in a measure responsible for some of that spread, because they having joined the real estate man in taking ten dollar bills in the shape of city property, have committed forgery by coolly raising the bills to one hundred dollars. That at once creates new conditions for all the city dwellers, owing to a return being immediately demanded on that watered stock.

The cartage of food products by the individual farmer from the farm to some market as is now the custom will always be the most expensive method. The time is coming when the motor will play an important part in co-operative marketing by farmers. That, however, must wait until proper road facilities exist for the motor. There is no class of the people who need co-operation more than our farmers. It will not alone benefit their pockets, but it will create new social conditions, making farm life more agreeable than at present. Important strides have been made in that respect in Europe, and while this subject may be regarded as having no place in a report on roads, still improved highways and good farming must go hand in hand in the development of the Province. The doing of things, whatever they may be in this age of competition, must be reduced as nearly as possible to a science. At present it is practically impossible to get from the farmer clear and concise figures of haulage cost. This is not offered in any sense of criticism. If such figures were available it would be possible to compile most interesting statements, showing the annual loss or gain on roads of various grades, to each township, which could easily be determined owing to the total agricultural production being fairly well known. The suggestion is offered that prizes should be given at agricultural fairs for the best statements supplied by farmers as to road haulage, on forms to be furnished by the Road Department of the Province. How many farmers are there who attempt to figure out costs and fix values on their time as well as that of their teams? And yet what other business could be expected to succeed in these strenuous times without such a method? Co-operation amongst the farmers would do more to further the good roads movement of Ontario than any other agency.

There are other reasons also, all more or less domestic. The life of any country, like that of every other life, is an organism, in which each part must perform its function, and the relation between these parts remains constant. If the city goes up in the grade of prosperity, the country districts must do likewise.


COST OF HAULING DIAGRAM
J $1.80 · Cost of Haul from Here to Market (Per Ton Mile) : Farmer Loses $2.60
H $1.00 $1.00.
G $3.20 Farmer Pockets $ .60.
F $2.40 $2.20.
D $1.60. $3.80.
B $ .80 $5.40.
Farm Produce cannot be Marketed Profitably Outside This Circle
Market Centre
Miles to Market 2.5 24 20 16 13 12 8 4
$22 Given for 2 Ton Load
Poor Road District (Cost per Ton Mile 20¢)
Good Road District (Cost per Ton Mile 10¢).
A $ .40 · Cost of Haul from Here to Market : Farmer Pockets $6.20
B $ .80 $5.40
C $1.20 $4.60
D $1.60 $3.80.
E $2.00 $3.00
F $2.40 $2.20.
Farm Produce can be Marketed Profitably within this Circle.

If not, unnatural conditions are developed, and that is largely the situation to-day. Furthermore, there will never be maintained a proper equilibrium between the city and country in North America until farm life is made more attractive. Therefore, while the city's difficulty—high cost of living—may to a certain extent be controlled by other means, for instance, by curbing extravagance, the partner of the tremendous "boom" that spread over the northern part of this continent in recent years—still the difficulty will never be solved until the farm life of the country is vitalized. And that is absolutely impossible without good roads—another reason why the city must assist in getting them. Where has anyone ever seen a thriving city with mud roads? None could continue to exist under such conditions. It is only necessary to state a case to see what it means and realize the effects of a parallel situation which largely actually exists in the country.

PLATE—A

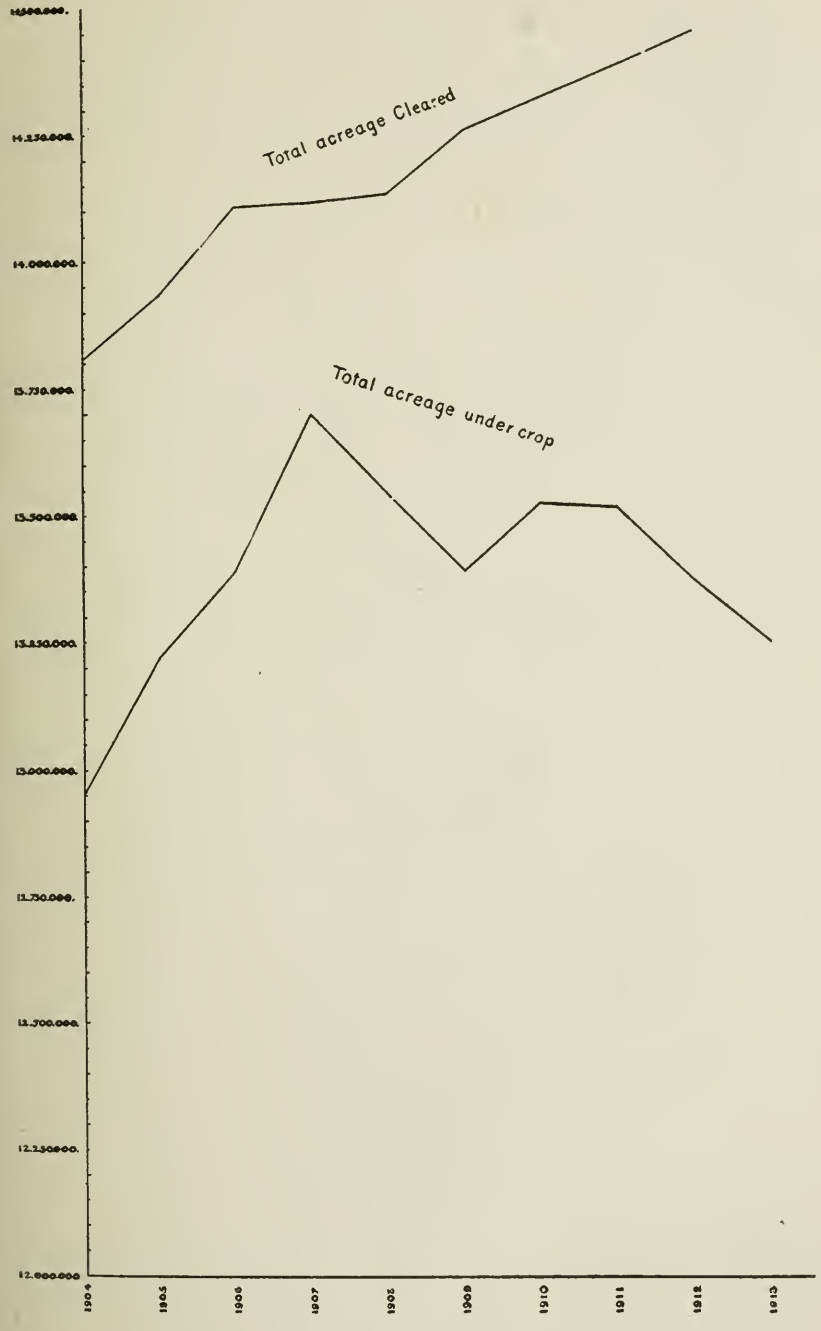

Total acreage Cleared
Total acreage under crop
14,500,000.
14,250,000.
14,000,000.
13,750,000.
13,500,000.
13,250,000.
13,000,000.
12,750,000.
12,500,000.
12,250,000.
12,000,000
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

PLATE B.

PLATE C.

PLATE D.

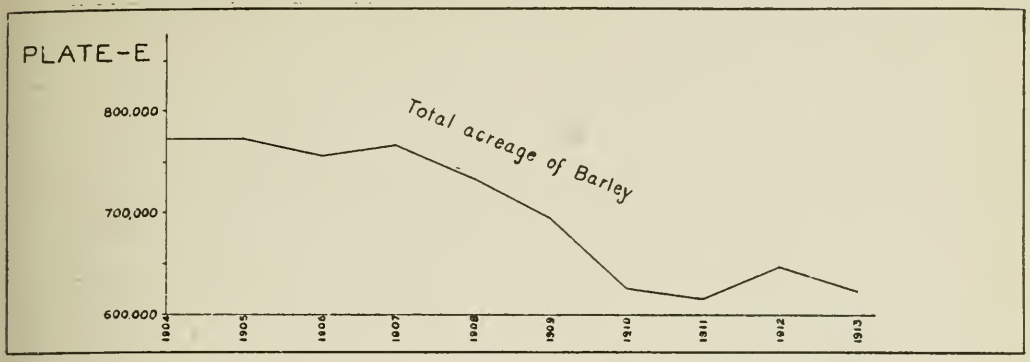


PLATE-E
800,000
700,000
600,000
Total acreage of Barley
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

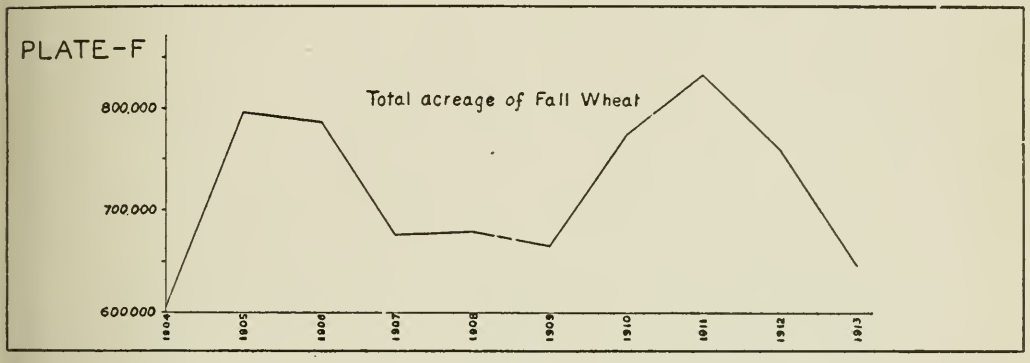


PLATE-F
800,000
700,000
600,000
Total acreage of Fall Wheat
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

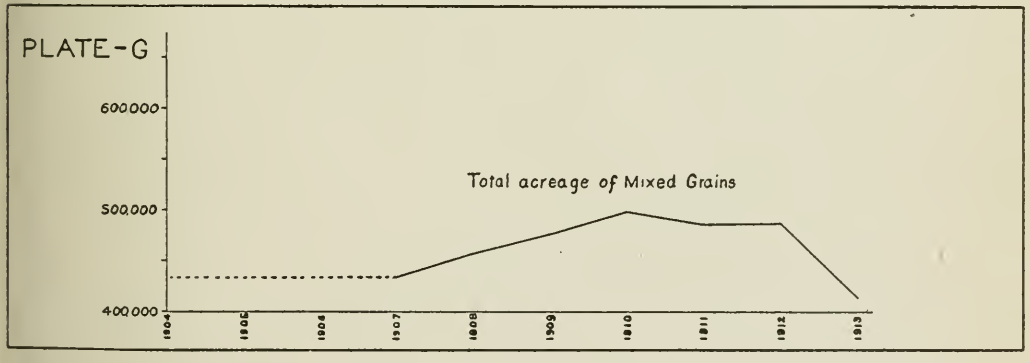


PLATE-G
600,000
500,000
400,000
Total acreage of Mixed Grains
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

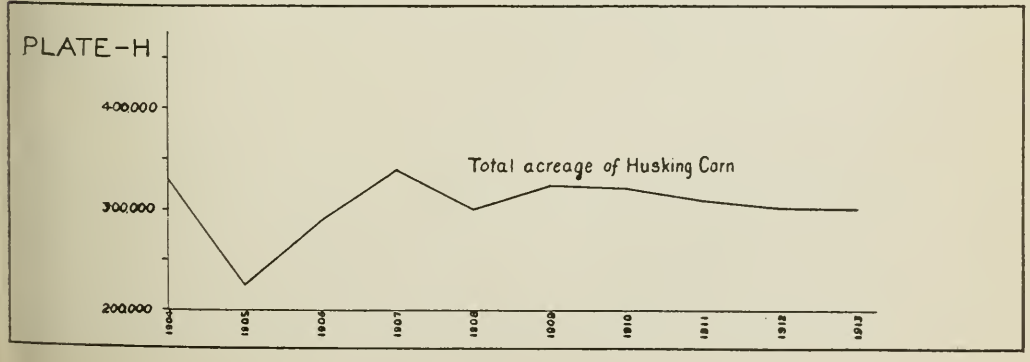


PLATE-H
400,000
300,000
200,000
Total acreage of Husking Corn
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

PLATE J

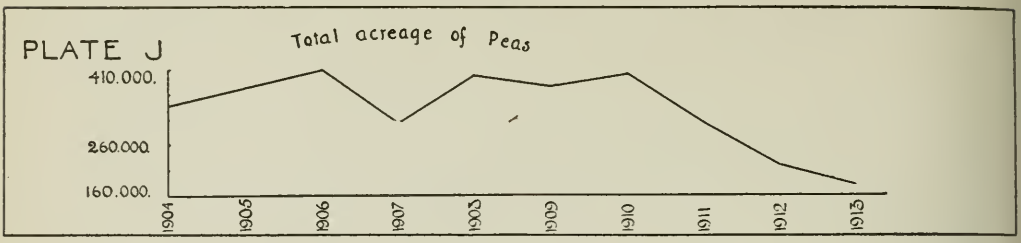


PLATE K.

PLATE L.

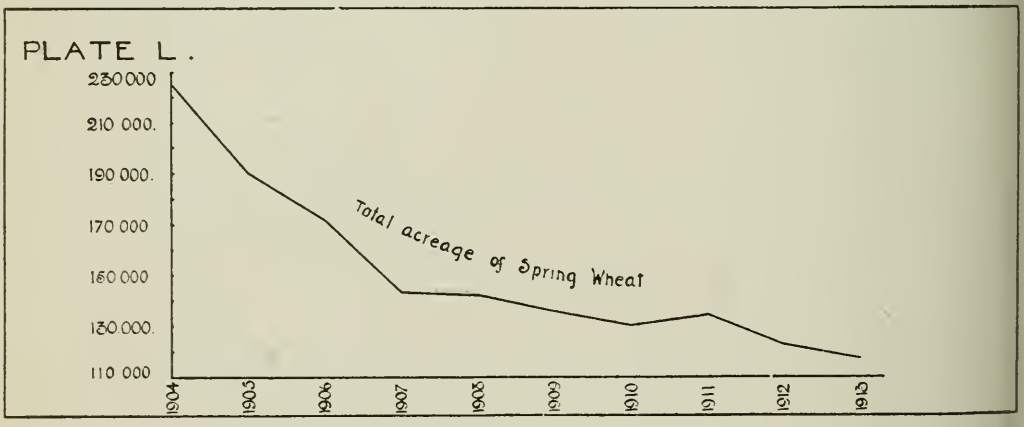


PLATE M

PLATE N.

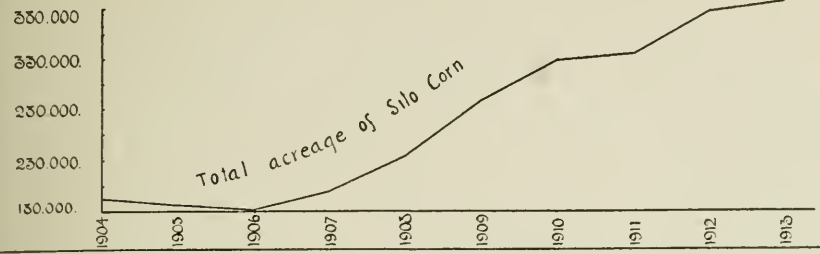


PLATE O

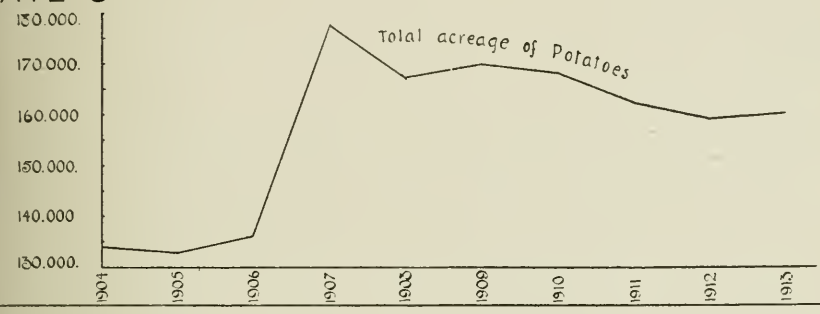


PLATE P.

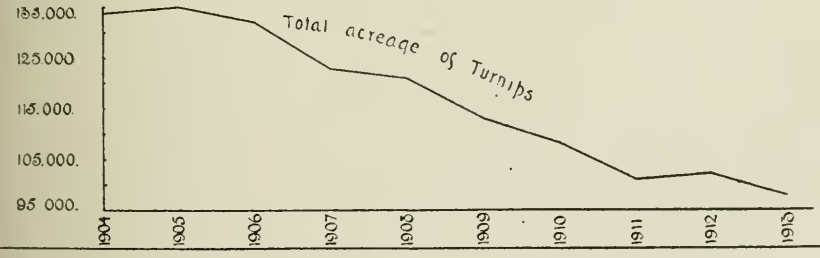
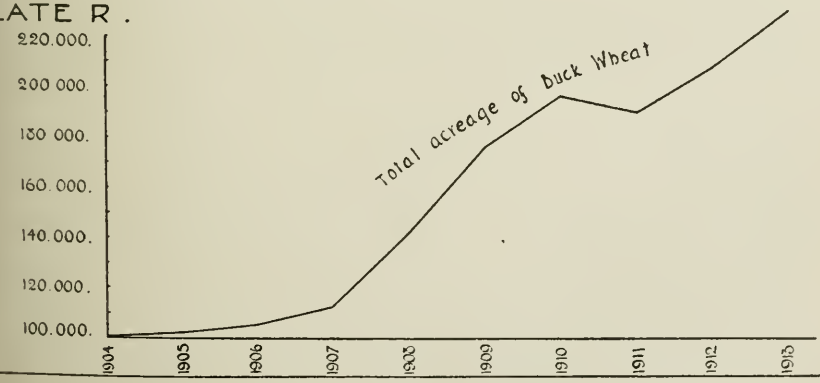


PLATE R.



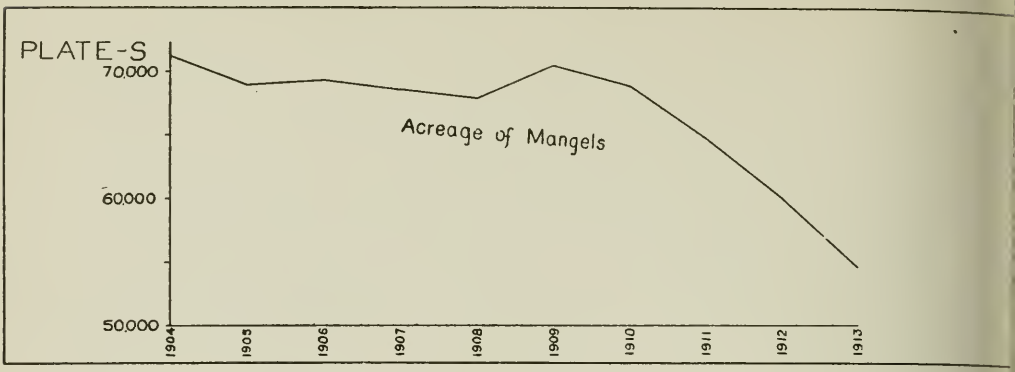


PLATE-S
70,000
60,000
50,000
Acreage of Mangels
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

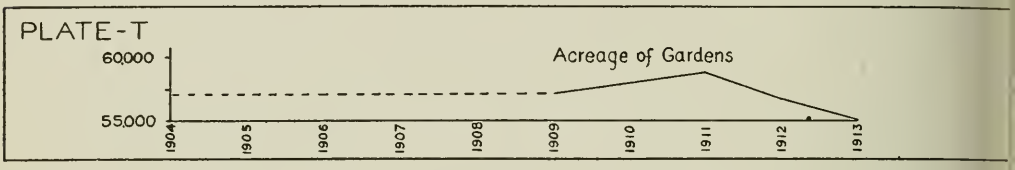


PLATE-T
60,000
55,000
Acreage of Gardens
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

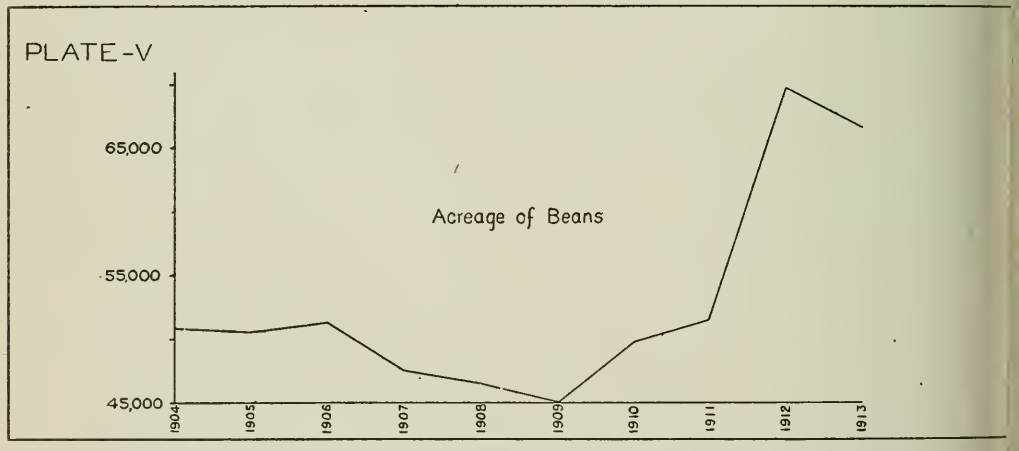


PLATE-V
65,000
55,000
45,000
Acreage of Beans
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

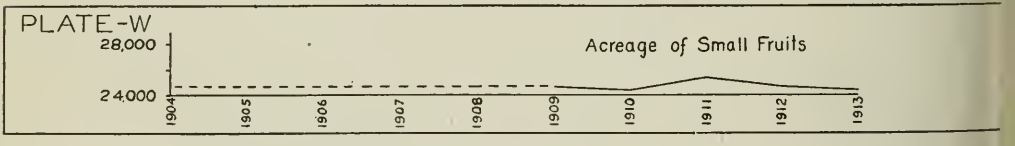


PLATE-W
28,000
24,000
Acreage of Small Fruits
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

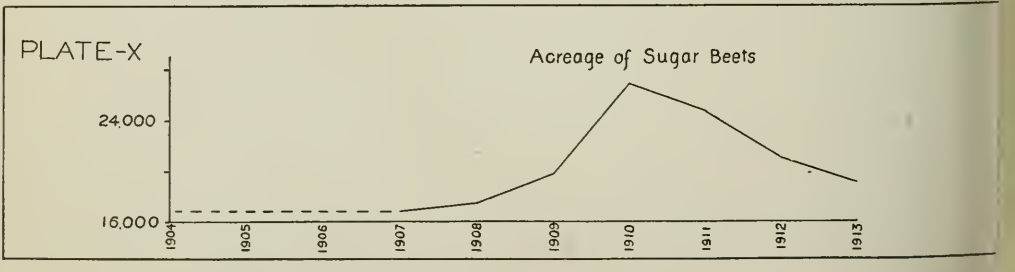
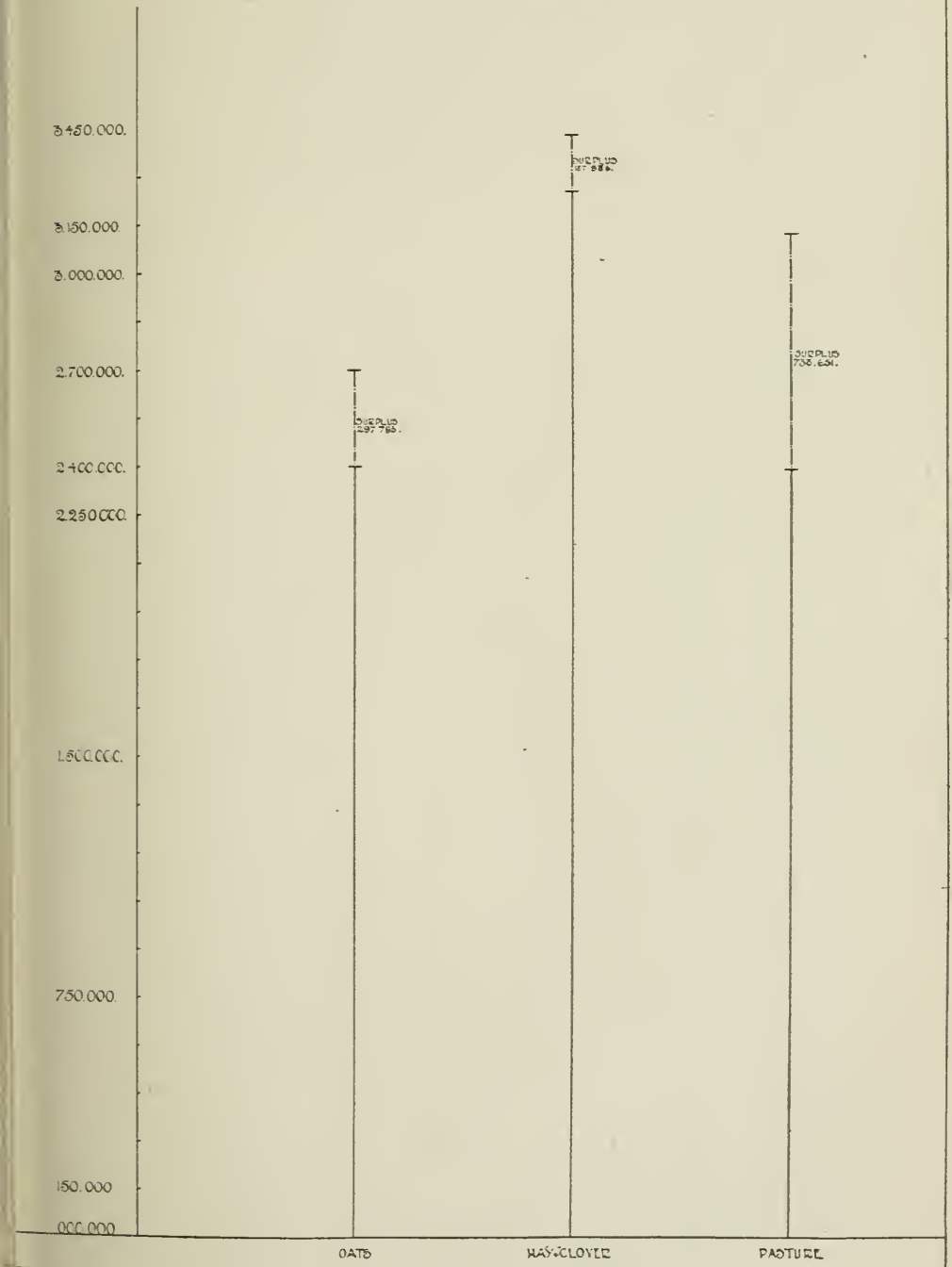


PLATE-X
24,000
16,000
Acreage of Sugar Beets
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913

PLATE XVII.

ASSUMING THAT PROVINCE LIVES ON PRODUCTS OF ITS OWN FARMS:
LENGTH OF SOLID LINE = ACREAGE NECESSARY TO SATISFY LOCAL DEMAND
LENGTH OF DOTTED LINE = SURPLUS ACREAGE.



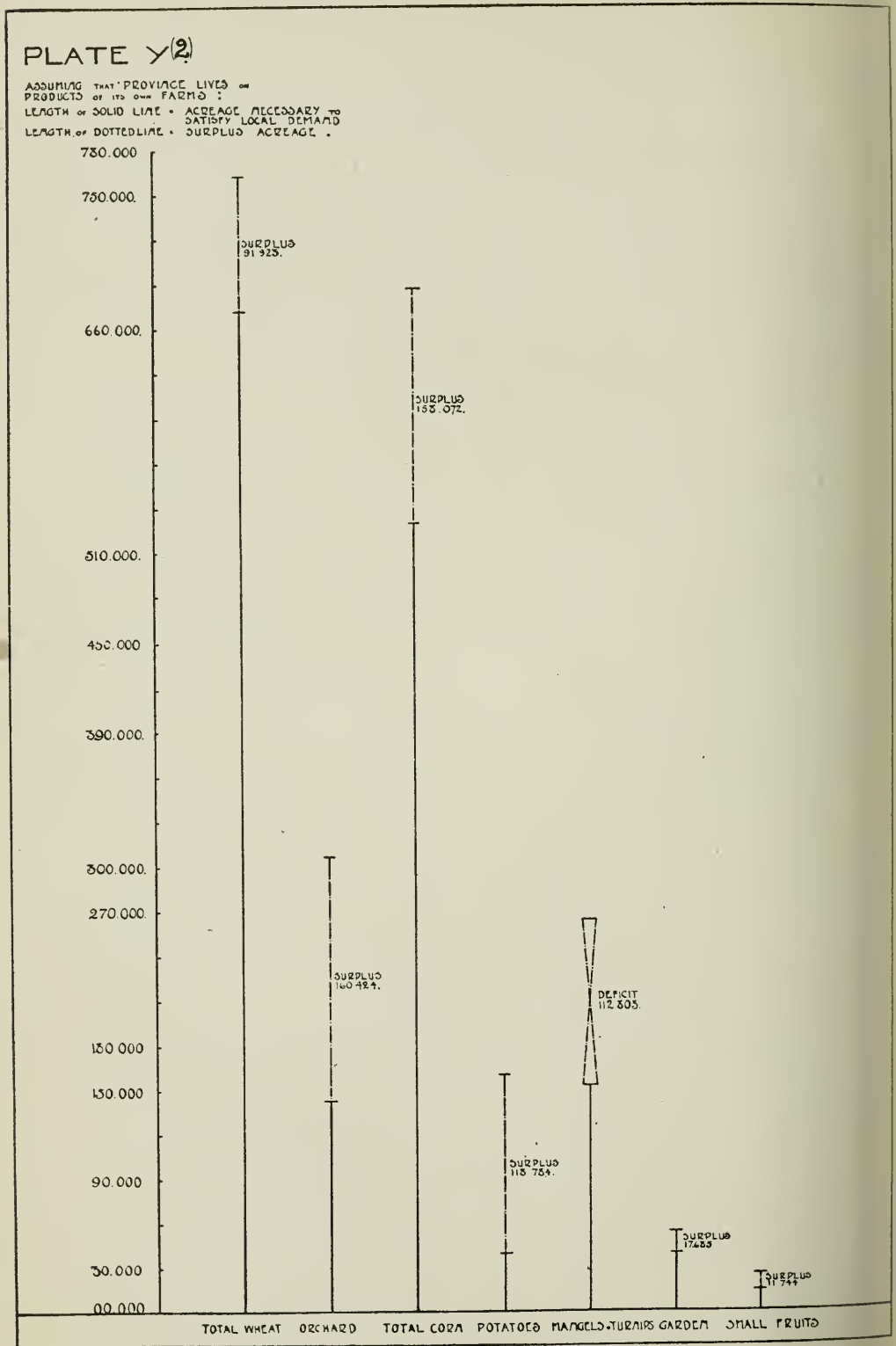


PLATE Y(2)
ASSUMING THAT PROVINCE LIVES ON PRODUCTS OF ITS OWN FARMS :
LENGTH OF SOLID LINE = ACREAGE NECESSARY TO SATISFY LOCAL DEMAND
LENGTH OF DOTTED LINE = SURPLUS ACREAGE .
730.000
750.000.
660.000.
510.000.
450.000
390.000.
300.000.
270.000.
150.000
130.000
90.000
30.000
00.000
SURPLUS 91 925.
SURPLUS 153.072.
SURPLUS 160 424.
SURPLUS 113 754.
DEFICIT 112 803.
SURPLUS 17483
SURPLUS 11 744
TOTAL WHEAT
ORCHARD
TOTAL CORN
POTATOES
MANGELS-TURNIPS
GARDEN
SMALL FRUITS

PLATE Z :

STOCK, HAY and PASTURE CHART
SHOWING PROPORTIONAL VARIATIONS
of ITEMS LISTED

APPENDIX No. 2

Municipal and other Resolutions Presented to the Commission

The following resolutions were presented to the Commission by certain Municipal Councils and Associations, viz.:—

I. The County Councils of

1. Bruce.
2. Elgin.
3. Essex.
4. Halton.
5. Hastings.
6. Middlesex.
7. Norfolk.
8. Ontario.
9. Stormont, Dundas and Glengarry.
10. Victoria.
11. Waterloo.
12. Wellington.
13. Wentworth.
14. York.
15. United Resolution of Wentworth, Norfolk, Brant, Welland, Haldimand and Lincoln.

II. The Township Councils of

1. Arthur.
2. Nelson.
3. Puslinch.
4. Toronto.
5. Williamsburg.
6. Municipalities on Kingston Road, (viz., Townships of Reach and Darlington; Towns of Whitby, Oshawa and Port Hope).

III. The Town and Village Councils of

1. Bronte.
2. Burlington.
3. Merritton and Port Dalhousie.
4. Oakville.

IV. The Council of the Munseys and Chippewas of
The Caradoc Indian Reserve.

V. The Boards of Trade of

1. Guelph.
2. Hamilton (with Manufacturers' Association).
3. Oakville.
4. Ontario Associated Boards of Trade.

VI. Motor Associations.

1. Hamilton Automobile Club.
2. Ottawa Valley Motor Car Association.

VII. Ontario Good Roads Association.

I. County Council of

(1) BRUCE.

"We, your Committee (*i.e., of Bruce County Council*) to which the proposed scheme of Provincial Good Roads has been referred, beg leave to report that if such a scheme is to be proceeded with that the following should be the basis:—

1. Municipal Control: That the municipalities should have the control of designating, construction and maintenance of such roads, subject to such regulations as may be deemed advisable by the Department of Public Works.

2. Control of Expenditures: That the expenditure on such designated roads should be under the supervision of a commissioner or commissioners appointed by the municipalities interested.

3. Financing: That the Provincial Government provide 50 per cent. of the necessary funds. That the increased grants required from the Provincial Treasury be largely provided for by an increase in the taxation of railway property and an increase in the auto tax based upon the horse power of the machine. That cities and towns separated from the counties for municipal purposes contribute 25 per cent. of the cost of construction and maintenance of such designated roads leading into such cities and towns. That the balance of funds required for the construction and maintenance of such designated roads be provided by the municipalities in which such roads are situated, and the cities, towns and villages to which such roads lead.

4. Federal Aid: That any aid given to public highways by the Federal Government should be allotted to the municipalities or counties on the basis of assessed value.

5. That we are strongly opposed to the proposed scheme of a large expenditure of public money for the construction of a Provincial System of Trunk roads."

(2) ELGIN.

That the Committee appointed to attend the Public Roads and Highways Commission at London, be instructed to include the following in their recommendations:—

(1) That the provisions of the Highway Improvement Act as to designation and construction of roads be continued for the improvement of the highways of the Province.

(2) That the Highways assumed for improvement should be classified in accordance with the estimated present and future traffic on each, viz.:

Main Highways,
County Roads,

and that the specifications for the construction of each be varied accordingly.

(3) That the cost of construction should be

Paid by the Province ..... one-half;
Paid by the County ..... one-third;
Paid by the Township, etc. ..... one-sixth;

in the proportions specified, or as may be determined by the Highway Improvement Act, and that an assessment for benefit should be levied on the properties along and adjacent to improved roads under provisions similar to those contained in the Municipal Drainage Act and that for this purpose each local municipality be considered an improvement area—the amount so assessed to be deducted from that payable by the township or local municipality.

(4) That the improved highways should be maintained by the Province, County and Township, or other local municipality in the proportions paid for original construction.

(5) That as a source of revenue for highway maintenance purposes, all motor vehicles be taxed at a rate per horse power, and that the Supplementary Revenue Act be amended by increasing the taxation of railways.

(6) That all specifications for Highway Improvement should be prepared by a competent engineer and approved by Provincial Highway Department and that all work undertaken should be under the supervision of approved engineers appointed by the County Councils.

(7) That the use of wagons with wide tires be made compulsory on all improved highways.

III. ESSEX.

(*Telegram*)

Owing to Essex County Council meeting to-day it will not be possible to send delegates to your meeting. But this county council believes that the Highway Improvement Act should be so amended that towns and cities not separated from counties for municipal purposes should be included in any county road improvement scheme, on the same basis and conditions as towns and cities not separated from counties for municipal purposes; also so amend the Act so that the Government would pay the same proportion for maintenance that they do for construction.

(Sgd.) ROBERT ATKINS, Warden.

(4) HALTON.

Moved by Chas. Reedhead,
Seconded by M. C. Smith,

And Resolved that we, the Good Roads Committee of Halton, wish to place ourselves upon record respectfully urging upon the Ontario Provincial Highways Commission and the Honourable Doctor Reaume, Minister of Public Works, the great necessity for the early construction of a permanent highway between Toronto and Hamilton. The greater portion of the Lake Shore Road, that extends through the County of Halton, is in a most deplorable condition and portions of this road are almost impassable. The ratepayers have waited patiently for two years, believing that a permanent highway would be built between Toronto and Hamilton. Our Committee feel that if a permanent highway is not to be built, the Commission of the Honourable Minister of Public Works should so advise us, as it is imperative that a road be built at least on portions of the Lake Shore Road through this County the present year. The municipalities could not undertake the construction of a permanent roadway, therefore would have to put down the ordinary macadamized road, and this would appear like a waste of money as the traffic in general has become so heavy over this road that an ordinary macadam road would only last for a year or two. The County of Halton, also the Councils of the Town of Oakville and the Village of Burlington and the Townships of Nelson and Trafalgar have already forwarded resolution to the Honourable the Minister of Public Works, urging the construction of this highway, and our object in passing this resolution is to bring to your attention the impassable condition of the Lake Shore Road, and to further urge that an announcement be made at the earliest date possible in respect to the construction of a permanent highway between Toronto and Hamilton. *Carried.*

(5) HASTINGS.

To the Roads Commission of the Province of Ontario:

GENTLEMEN,—The Council of the County of Hastings submits for your consideration the following recommendations:—

(1) That legislation be passed prohibiting the manufacture of new vehicles, and the removal of old ones, carrying 1,500 pounds or over, of a less width of tire than four inches, and that five years only be allowed for changing to the same width the tires of existing vehicles of similar capacity.

(2) That a tax of 50 cents per horse-power be imposed in lieu of the existing license fee upon all autos up to and including twenty horse-power; 75 cents per horse-power on autos above 20 horse-power up to and including those of 30 horse-power, and $1.00 per horse-power upon all autos above 30 horse-power, and that the money so raised be applied for highway improvement.

(3) That expenditures hereafter made upon all County Roads and Bridges shall be borne one-third by the County in which they are situated and two-thirds by the Government of the Province.

(4) That it is of supreme importance that the cost of maintenance should be borne in the same proportions as the cost of construction by the County and Province respectively.

(5) That, as we consider County Roads should be constructed in such places only as will be in the general interest, we are opposed to a frontage tax.

(6) That the Highways connecting the producer with the producer's market receive first consideration, and that such roads be selected where the Council of each County shall approve.

(6) MIDDLESEX.

(1) We approve of Provincial and Federal Aid toward construction and maintenance of Highways.

(2) We disapprove of Federal or Provincial management and control of Highways, except under special conditions, believing such aid or assistance as the Federal Government gives should be paid direct to the Provincial Government and by them, together with their contributions, be paid in turn to the County or Township Councils for Highway Improvement under regulations prepared by the Provincial Highway Department of Public Works, and that all works of Road Improvement should be under the direct management of Commissions or Commissioners appointed and directed by the County or Township Councils, supervised by the Provincial Engineers and Inspectors.

(3) That the leading roads to market centres within the County should be managed and controlled by the County Councils and roads of less importance by the Township Councils.

(4) We believe in the use of gravel for road construction on all roads within the County where a good quality of gravel is available and further, that any plan or scheme that would require or compel the construction of a more expensive class of road than a properly constructed gravel road in localities where gravel is easily accessible would be detrimental to the interest of the ratepayers of the County.

(5) That where gravel is expensive in comparison with other materials such as crushed stone or where a good quality of gravel is not available we believe a plan should be adopted to build a good road such as crushed stone or other higher class road.

(6) Maintenance of highways is infinitely more important than construction, therefore any scheme that fails to provide for an adequate and systematic plan for maintenance of highway must inevitably fail to produce results.

(7) Government grants should amount to at least 50 per cent. of the cost of construction and rebuilding.

(8) Under the Act for Improvement of Highways when a road is in need of repair it must be practically rebuilt in order to receive the Government grant on the cost of the work. This undesirable condition would be overcome by the Government recognizing the importance of repairing and maintaining highways by paying 50 per cent. of the cost of repairs and maintenance of all roads that have been properly constructed and towards which they are contributing for construction.

(9) In regard to assessment on frontage, we submit that in this County the benefit to farms along such improved roads or near them would not be sufficient to justify the expense and complications such a plan would involve.

(10) Villages and towns not separated from the County for municipal purposes should receive equal benefit from the Government plan as is derived by the Township Municipalities through the assumption by the County of their main roads, and all moneys levied upon such villages and towns for the purpose of County Road Improvement should, as nearly as possible, be returned to them by way of grants.

(11) In the matter of deciding what roads should be placed under control of the County Councils, the Councils of the Townships should be consulted.

(12) Provision should be made so that municipalities cannot be held liable for accidents on roads under construction or after construction, provided the work has been done in compliance with the regulations prepared by the Department of Public Works.

(7) NORFOLK.

Resolution on motion of Mr. Squire, seconded by Mr. Jones.

Ordered, That the Clerk be authorized to send a copy of the following memorial to the Chairman of the Public Roads and Highways Commission as expressing the opinion of the County Council of the County of Norfolk.

We, the County Council of the County of Norfolk assembled, are of the opinion that any Legislation framed for the purpose of improving Public Highways should—

(1) Arrange for the expenditure of public money whether derived from the Federal or Provincial Treasurers in order that the greatest good shall accrue to the greatest number.

(2) That the producer be assisted as far as possible to have better roads to reach his natural market.

(3) That Government aid be given for the upkeep of permanent roads as well as for their construction.

(4) That the automobile should bear a share of the cost of any expenditure on improved highways. Such tax should be on a graduated scale—the light power car paying a smaller tax than the heavy power car. Such moneys to be applied to improvement of highways.

(5) That should the Government consider it advisable to build main or Government Highways, they should be constructed linking every County in Old Ontario.

(6) That the kind of roads to be built in each County shall be decided upon by the Government.

(7) Thus roads which are subject to heavy traffic may be required to be constructed superior to roads which will be subject to lighter traffic.

(8) That the Government arrange to borrow the money which will be used in the construction of Permanent Highways by the various Municipalities and re-loan the same to them at the same rate of interest as paid.

(9) That every assistance be given to improve the unsurfaced roads of our country and that the municipalities be furnished with information which may tend to such improvement.

(10) That streets in villages or towns (having a population of 1,500 or under) which form a link in or in continuation of a system of improved roads shall be made a part of such County Road System.

(11) That Government aid to the County Road System be increased to at least 50 per cent. of the total of such roads.

(12) That all specifications for Highway Improvement should be prepared by a competent Engineer, and approved of by the Provincial Highway Department and that all work undertaken should be under the supervision of approved Engineers appointed by the County Council.

(13) That we believe in assessment for benefit in connection with the improvement of Public Highways.

(14) That such assessment shall be levied on the properties along and adjacent to improved roads under provisions similar to those contained in the Municipal Drainage Act, and for this purpose each local municipality be considered an improvement area, the amount so assumed to be deducted from that payable by the Township or local Municipality.

(8) ONTARIO.

Moved by Mr. Gerow,

Seconded by Mr. Wetheral.

Whereas a general movement in the Province and in the Dominion at large is being manifested for the construction of highways adequate to modern traffic,

And Whereas the building of such highways would facilitate such communication and prove a great economic saving and social advantage to the Province,

And Whereas the Province of Ontario has fifty thousand miles of public roads of which less than fifty per cent., if permanently constructed, would accommodate eighty per cent. of the traffic;

Be it therefore resolved,

(1) That this Body put itself on record as favouring highway betterment, and the raising of the standard of road construction in general, and as urging the necessity of constructing leading highways uniting county systems, and the establishment of an organization for permanently maintaining the same, under Government supervision; the Province in each instance contributing at least 50 per cent. and the municipalities the balance.

(2) And that the Clerk forward a copy of this Resolution to the Honourable the Minister of Public Works for this Province and the Secretary of the Provincial Highway Commission.

(9) STORMONT, DUNDAS AND GLENGARRY.

To the Minister of Public Works:

The memorial of the Counties' Council of the United Counties of Stormont, Dundas and Glengarry in Council assembled, humbly showeth:

That in the opinion of Your Petitioners, the time has arrived when the proportion of Aid granted by the Province towards the cost of construction of County systems of Good Roads, under the "Act for Improvement of Public Highways" should be increased from one-third, as heretofore, to one-half of the entire expense so incurred. This, in our opinion, is about the only effective way of overcoming the antagonism which undoubtedly exists on the part of Township Municipalities towards such an undertaking on the part of Counties, and the expenditure of the moneys under County supervision.

That Your Petitioners are also of the opinion that the question of the subsequent maintenance of a County system of Good Roads exclusively by the County or Counties after initial construction is another obstacle to the undertaking of such a scheme in many Counties, and certainly in this Union. They are firmly of the opinion that the Province should contribute in the same proportion (one-half, or, at the very least, one-third) to the maintenance and repair of County Road systems when constructed.

That the wear upon Highway surfaces, when improved, by high power automobiles going at speed, will be considerable, and will more than any one other item, give rise to necessity for repairs.

Your Petitioners therefore think that the law regulating the licensing of these machines should be amended and a heavier license fee imposed, graduated according to the horse power of the machine, and that the fund thereby created should be utilized solely for the purpose of contributing to the maintenance of County systems aforesaid after construction, together with any such further sums as may be necessary to make up the necessary proportion (one-third or one-half).

Your Petitioners therefore pray,

That the suggestions above made be carefully considered by your Department and by the Board of Highway Commissioners with a view of having them embodied in future amendments, if approved of.

And Your Petitioners as in duty bound will ever pray.

(10) VICTORIA.

Statement adopted by the Council of the County of Victoria, January 31st, 1914, for the Public Roads and Highways Commission of Ontario:—

(*a*) The County of Victoria consists of two distinct classes of Townships, one comprising the first and second ranges consisting of the six rural municipalities of Mariposa, Ops, Emily, Verulam, Fenelon, and Eldon, and including within their bounds the county town and all the other urban municipalities. These rank among the most important in the Province in value and population. The other comprises the townships of Somerville, Bexley, Carden, Dalton, Laxton, Digby and Longford, forming five municipalities, which rank in all respects with the townships in the Provisional County of Haliburton and the district of Muskoka to which they extend.

(*b*) The two front ranges are geographically so situated as to form a territory in which a continuous road system might with advantage be established.

(*c*) The other municipalities both in value and location are so situated that they could not be included in such a system.

(*d*) The latter municipalities should be included in a zone or area in which the bridges wholly and in some degree the highways apart from the bridges should be built and maintained by the Province.

(*e*) It is unreasonable and unjust that the County of Victoria should be burdened, as indeed it is grievously burdened, with the building of first class bridges in the municipalities referred to while in townships of similar quality but not in fully organized counties, the building of such bridges is assumed wholly by the Province.

(*f*) The latter municipalities contribute only $65.42 of each $1,000 of the rate for county purposes. During the past ten years over five-twelfths of the whole expenditure on bridges in the county has been devoted to structures in these municipalities. To illustrate the effect—in the past seven years three bridges have been erected of concrete and steel which have cost the County $18,500, and towards the cost these municipalities have been able to contribute in taxation only $1,210.

(*g*) It cannot be too strongly impressed upon the Commission and the Government that a decided change of policy is demanded by the position in which the County of Victoria is placed by reason of the fact that two-fifths of its area, and that in one block, is of the same quality as townships in districts or not fully organized territory in which the Province bears the cost of bridges, while, as has been shown, the great cost of such works in the area in question has to be borne almost wholly by the municipalities in the two front ranges of townships in the County.

(*h*) The legislation that may result from the Report of the Commission should be so framed as to provide that the County of Victoria and Counties which are similarly situated would have the right to form a portion of the County into a good roads area to which the Act would apply as if it were a whole county, and that the remainder of the county should for the purposes of bridges and roads be included in a zone or territory in which the bridges, and to a reasonable extent, the roads would be built and maintained by the Province.

(11) WATERLOO.

Recommendation of the Roads and Bridges Committee adopted by the Municipal Council of the County of Waterloo:—

"That the attention of the Highway Commission be drawn to the advisability of amending the Highway Improvement Act, which now prohibits the County Road Superintendent from employing any municipal councillor in any capacity, in order that we may revert to the system of carrying on the county road work previously followed in this County."

(12) WELLINGTON.

The County Council of the County of Wellington respectfully submit the following recommendations for the consideration of the Commission.

(1) That whereas it is generally conceded that 75 per. cent. of the total vehicular traffic in this Province is served by 25 per cent. of the highways, the most travelled roads in each county being the highways converging on the principal market centres,

(2) We are of opinion that any system of County Roads assumed, or to be assumed, by any county should first include the highways leading into every market town in the County, thereby accommodating the ratepayers who contribute to the cost of building and maintaining the same and who in many cases seldom travel any other road than that leading to their own market town. And in counties where the roads already assumed do not provide such a system, provision should be made in the Highway Improvement Act whereby a portion of the roads already assumed shall be thrown back upon or revert to the local municipalities in which the same are situated and other mileage which would serve a greater number of people assumed in lieu thereof.

(3) That the proportion to be contributed by the Ontario Government for the construction of County Roads be increased to one-half the cost thereof, and in the event of any subsidy or subsidies being appropriated by the Parliament of the Dominion of Canada to be expended by or through the Provincial Legislature for highway improvement, then the proportion payable be increased to two-thirds the cost of such construction.

(4) That the Highway Improvement Act be amended so as to provide for the Government contributing a fair proportion of the annual cost of maintaining the constructed roads in an efficient state of repair and also for the purchase of new parts and repairs for road machinery.

(5) That the amount payable for licenses for automobiles and other motor vehicles be largely increased on some equitable basis according to the horse power, weight and usage thereof, and the revenue derived from this source transferred to a special account to be expended for road repairs only.

(6) That provision be made whereby cities and towns separated from the County for municipal purposes shall contribute a proper proportion of the cost of construction, maintenance and repair of County Roads leading to, or adjacent to, any such separated city or town.

(7) That provision be made for the employment of prison labour in the manufacture of road material and where possible for the construction of highways.

(8) That the Commission recommend that an effort be made by the Government to secure cheaper freight rates for the delivery of road material for the construction of good roads throughout the Province. Bad roads mean lack of communication, poor transportation, and a large annual loss in freight rates to the railway companies as well as millions of wealth to the farmers.

(9) That Section 6 of the Highway Improvement Act as amended be further amended by adding after the words "authorized by the Municipal Act" in the said Section 6 as amended, the following words:—

(*a*) "Or the Council may by by-law provide the money required by raising annually for a period not exceeding ten years an equal annual sum by annual county rate in the manner authorized by the Municipal Act," and further by adding at the end of the said Section 6, as amended, the following words:—

(*b*) "Provided that no by-law passed for raising annually, for a period not exceeding ten years, an equal amount annually as aforesaid, shall be repealed until the expiry of such period."

(10) That the Commission recommend that the Government provide the Municipal Council of any County taking advantage of the Highway Improvement Act with such sums of money as may be necessary to meet any expenditure on highways under the Act at a rate of interest not exceeding four per cent. per annum.

(13) WENTWORTH.

To the Warden and Councillors of the Municipal Council of the County of Wentworth.

GENTLEMEN,—Your Committee, appointed to inquire as to the expediency of continuing the present system of road administration as laid down by the Government Regulations as affecting the County of Wentworth, beg leave to report as follows:—

(1) We find the following conditions existing—the amount of money expended for construction and maintenance of the County Highway System, including the cost of machinery necessary to maintain the system in the present unsatisfactory condition, to be $92,360 and $120,072 respectively or a total of $212,432 during the years 1908 and 1913 inclusive to date.

(2) We, therefore, recommend the Council to strongly urge upon the Commission the absolute necessity for providing some financial assistance to be expended towards the maintenance of the highways constructed under the Government regulations.

(3) We further recommend the calling of the Commission's attention to a very desirable amendment which we deem necessary in the interests of good highways, as follows:—where the conditions referred to in Section 12, Ch. 11, 2 George V, 1912, arise that the following be inserted after the word "locality" in line nine—"Council of any city or separate town shall provide such a proportion of the money deemed necessary by the Ontario Highways Commission to construct such a highway as they would approve, said highway to be constructed under the supervision of the said Commission who shall apportion the percentage of expenditure the affected municipalities shall respectively be required to pay."

The Plains Road in Wentworth, near Hamilton.

Hill-cutting in Carleton County.

(14) YORK.

Moved by H. Ramsden,

Seconded by W. Keith.

That Whereas the Provincial Highway Commission of the Province of Ontario have requested the Council of the County of York to present to the Commission the views of the County Council on road conditions and methods of improvement throughout Ontario.

Therefore be it resolved, that in the opinion of this committee of the Council of the County of York:—

(1) The Government should establish a system of Provincial roads, that such roads should be leading roads running out from the large centres of population and should be built and maintained entirely by the Province.

(2) And that an increased grant be given to the County Road Systems with the same proportion towards maintenance.

(3) And that roads leading through urban municipalities, united with counties for county purposes, be treated the same as other portions of the County System.

(4) And that an adequate tax be imposed on self-propelled vehicles, such tax graded according to weight and power.

(5) And that the revenue derived from such tax be apportioned among the municipalities according to the cost of maintenance of approved roads built by said municipalities.

(6) And that an increased tax be imposed upon all railways and this revenue be used for the purpose of building and maintaining good roads.

(7) And that the Dominion Government be petitioned to make a substantial grant annually for Good Roads purposes.

(15) RESOLUTION PRESENTED AT HAMILTON,

NOVEMBER 11TH, 1913, BY COUNTIES OF WENTWORTH, NORFOLK, BRANT, WELLAND, HALDIMAND AND LINCOLN.

(1) That we believe the Federal Government should assist by a substantial grant the building and maintenance of improved highways. That such grant should extend over a period of years to give continuity to any comprehensive scheme.

(2) That we believe any money received from the Federal Government by the Provincial Government should be spent by the Provincial Government for the building of through roads as Provincial Roads.

(3) That we approve of Government aid in not only building but maintaining roads in every County which adopts advanced methods of road building, to the extent of two-thirds of such cost. Counties to contribute one-third of such cost.

(4) That whereas there are now in our Province in active use about sixteen thousand automobiles, which machines are capable of going great distances in a comparatively short time and which is contributing very largely to wearing out of our Good Roads System, therefore be it resolved that this meeting petition the Ontario Government to place a substantial tax, according to horse power, on all automobiles, said tax to be applied on road building.

II. Township Council of

(1) ARTHUR.

Moved by John W. Ghent,
Seconded by J. A. Douglas.

That in the opinion of this meeting any money that may be expended by the Provincial Government or any additional to the sum now spent by the County Council for the improvement of our highways would be spent to the best interests of the great majority of the people who require to use the roads for business purposes, by improving those roads leading to our nearest market centres, rather than by building a system of trunk or leading roads or connecting up the various county systems. Also we consider it in the best interests of the rural communities who largely built the roads and who alone require to use them for business purposes, that the control of the roads remain in the hands of the local municipalities; and we think a system of trunk or leading roads is only desired by those who wish to use them for pleasure, and in our opinion the cost of improving roads for pleasure should not be made a burden on the whole community, but should be borne by the parties who wish to use them for that purpose, viz., the owners of automobiles. *Carried unanimously.*

(2) NELSON.

We, the undersigned members of the Municipal Council of the Township of Nelson wish to place ourselves upon record as being strongly in favor of an improved highway system, throughout the older portion of the Province of Ontario. We have had some experience in the building of macadam roadways in the County and already realize that the problem of roads is such a vast one that we feel that a road system such as would be beneficial to the older portion of the Province of Ontario cannot be brought about under the present system of road construction. While we have in the County of Halton only got well started in the way of road improvement, our taxes, however, have gone to a point where it would be detrimental to the interest of the community to place a higher assessment upon the land.

(1) We are of the opinion that the leading roads in the older portion of this Province should be made Provincial Highways, and that these highways should be constructed and maintained by the Provincial Government under the supervision of a Highways Commission.

(2) We are further of the opinion that the Provincial Government should select other roads that would be the most suitable for feeders to what would be the Provincial Highways, and let them be designated County Roads, and we believe that the Provincial Government should pay a good portion of the cost of both the Provincial and what would be known as County Highways.

(3) We believe that the Dominion Government should give a subsidy to the Provincial Government on all roads constructed and known as Provincial or County Roads.

(4) We believe that the property fronting upon improved highways should pay a reasonable frontage tax.

(5) We are further of the opinion that the cities, towns and villages that are connected up should pay a portion of the cost of these highways.

(6) We fully realize that it would be bad judgment on the part of the Government and the people to continue to construct improved roadways without making any preparation for the maintenance; and conisdering that the automobile has upset all road standards, and that a higher class and more expensive roadway is required from the advent of the automobile, we therefore strongly urge that a horse power tax be placed upon the automobile, and that that tax be used by the Government for the maintenance of Provincial and County Highways. We would still have what would be known as the Township Roads, and we feel that the upkeep of the Township Roads would be about all that could be taken care of by a municipality. In the past, the Government have given liberally to the construction of railways, canals, harbours, etc., and are expending millions of dollars at the present time along this line, and as we understand these expenditures are being made by the Government to lessen the cost of transportation, we believe that millions of dollars could be saved to the country each year in handling the prduce from the farm to the railway and in the construction of through roads that would connect up all of the great consuming centres, and thereby enable the producer to haul his produce by motor truck, etc., a much greater distance. This would also be the means of bringing the producer and the consumer in direct touch with one another.

(7) We respectfully submit that a road between Toronto and Hamilton should be constructed at an early date, as we believe that this road would bring more producers and consumers together, than any other piece of road that could be constructed of a like distance.

(3) PUSLINCH.

We, the members of the Township Council of the Township of Puslinch, County of Wellington, do hereby represent to your Honourable body what we believe to be the mind of the ratepayers of the Township which we represent in the matter of Highway Improvement.

(1) That we believe the present system of roadbuilding and maintenance must be improved upon.

(2) That we most earnestly and seriously object to the building of so-called "Trunk Roads" through the Province.

(3) That the increased motor traffic being largely responsible for the depreciation of the leading highways, we therefore ask that a reasonably heavy and proportionate tax be imposed on all motor vehicles running through the municipalities.

(4) That the said tax, together with an increased Government grant, be proportionately applied to the building and maintaining the leading roads in the municipality.

(5) That greater provision be made by the Legislature to prevent drivers of motor vehicles running at excessive speed and for the punishment of offenders.

(6) That we emphatically disapprove of any action to take the control of any part of our highways out of the hands of our local municipalities.

(4) TORONTO.

Moved by L. H. Pallett,
Seconded by D. H. McCaugherty,

And resolved that this Council urge upon the Highway Commission the necessity of giving Township assistance rebuilding of roads in the different Townships, and instruct Clerk to forward copy of above resolution to the Highway Commission. *Carried.*

(5) WILLIAMSBURG.

Moved by J. H. Deeks,
Seconded by T. C. Merkley,

And resolved that whereas the Ontario Government has appointed a Commission to investigate the whole question of better roads, therefore the Municipal Council of the Township of Williamsburg would respectfully urge upon the Commission that the first roads to be improved should be the market roads in each local Municipality, and that any assistance granted should be expended by each local Municipality under the direction of the Government Engineer, also that the Government should abolish the present system of Statute Labour. The Clerk is hereby authorized to send a certified copy of this resolution to the chairman of the Commissions of Highways. *Carried unanimously.*

Moved by John M. Casselman,
Seconded by Robert Cunningham.

That this Council believes that the rate-payers of the Township of Williamsburg are not desirous of entering in the Good Roads System as it would have a tendency to increase the taxes which are somewhat burdensome at present, but would appreciate any grant made by the Government to the Township for the improvement of the roads and bridges therein. *Carried.*

(6) MUNICIPALITIES ON KINGSTON ROAD.

(Townships of Reach and Darlington; Towns of Whitby, Oshawa and Port Hope.)

Moved by Mr. Laidlaw,
Seconded by Reeve Sparks of Pickering.

That the Kingston Road be taken over by the Government, re-surfaced, grades cut down by fills or cuttings or by deviations where necessary.

That the Government maintain the road and supply the necessary machinery and overseers, and that towns, villages, and townships adjacent to the Kingston Road may have the use of the road equipment, and advice of the overseers at the request of the municipality.

That your Committee also recommend that provided the County take advantage of the Highway Improvement Act the Government increase their contribution for construction and maintenance of all leading market roads to 50 per cent.

That your Committee also recommend that the width of tires of heavy vehicles be increased to not less than four inches, and that the tax on automobiles be graded increasing with the amount of horse power; proceeds of such tax to be applied to road building and maintenance. And that the freight rates on crushed stone, gravel and road-building material be reduced.

Road Construction Camp in Lennox and Addington.

A Gravel Road in the County of Lennox and Addington.

III. Town or Village Council of

(1) BRONTE.

Moved by W. Sargant,
Seconded by J. W. Humerfelt.

That as the trustees of our Village of Bronte, we feel we are but expressing the unanimous desire of our people in representing to the Ontario Highway Commission the urgent necessity of the Government of Ontario constructing and maintaining certain through or leading highways. The large amount of through traffic passing over the Lake Shore Road between Toronto and Hamilton shows conclusively that local municipalities should not be expected to keep up roads to be largely used by non-residents. On behalf of our whole community we would like to urge upon your Commission and through you upon the Government the urgent and growing necessity for a permanent Government Highway along the Lake Shore Road between the two large cities of Toronto and Hamilton. Without doubt the great amount of travel, and the large number of people served, should lead the Government to select the Lake Road as the first permanent highway to be constructed in Ontario. This particular road stands out paramount as it is almost a continuous settlement of small farms and holdings from city to city and should serve to bring the producer and consumer much closer together with profit to both.

(2) BURLINGTON.

We are of the opinion:

(1) That Provincial Highways should be constructed connecting the different important centres of the Province.

(2) That County or Township roads should be constructed as feeders and connecting links from the smaller towns and farming districts to the Provincial Highways.

(3) That all Provincial Highways should be constructed under Government commission.

(4) That the larger portion of the cost should be borne by the Provincial and Dominion Governments, and that the balance should be paid by frontage tax on the property fronting on their permanent highways and by the cities, towns and villages through which these permanent highways run.

(5) That a horse-power tax should be placed on all automobiles and this revenue to be used by the Government for the maintenance of Provincial Highways.

(6) That the Lake Shore Road which connects the cities of Hamilton and Toronto and serves a population of over half a million people, and which at present is in a deplorable condition should be the first Provincial Highway constructed.

(7) That a copy of this resolution be sent to the Honourable Commission of Public Roads and Highways.

(3) MERRITTON AND PORT DALHOUSIE.

The Petition of the Municipal Councils of the villages of Merritton and Port Dalhousie in the County of Lincoln,

Humbly showeth:

That your Petitioners wish to bring to your notice the following particulars in regard to what we consider an injustice that is being done them, and which has been acknowledged by members of the County Council, but just how to relieve these two Municipalities of this injustice they have been at a loss to know.

(1) Those two Municipalities have been paying—Port Dalhousie from 1862 and Merritton from 1874—towards the up-keep of the highway known as the Queenston and Grimsby Stone Road, extending from the westerly limit of the Township of North Grimsby to the Niagara River at Queenston, in the County of Lincoln, and no part of this road comes within a mile or more of either Merritton or Port Dalhousie, nor is it travelled over or used by our ratepayers.

(2) This year Merritton had to pay the sum of $956.72 and for the last five years we have paid towards the upkeep of this road $3,602.42. And Port Dalhousie this year paid $719.36, and for the last five years we have had to pay $2,711.44 which is a very heavy tax on two small villages such as we are, as well as keeping up their own streets. The former Municipality (Merritton) having a few years ago to take over and keep up about three miles of a toll road which was abandoned by the Company that controlled it.

And your petitioners would most respectfully pray that your Honourable Body in considering and working out your highway improvement system would take the position of those two Municipalities into consideration and if at all possible to relieve them of the burden of having to pay toward a road that does not run through either place, and from which our citizens receive no benefit whatever, and will enable us to expend this additional amount on the up-keep of the streets of our local Municipalities.

(4) OAKVILLE.

Moved by W. H. Carson,
Seconded by James P. McDermott.

Realizing the great need and importance of an improved highway system and further realizing how impossible it would be to bring about a system of highways under the present road system, and further, how impossible it would be to finance such a road system as this Province is sorely in need of:

This Council hereby declares that we are heartily in accord with the Ontario Government programme of expending $10,000,000 upon an improved highway system. We believe that the Commission should map out the highways and select such as would serve the best interests of the older portion of this Province which should be designated Provincial Highways.

We further believe that all road construction should be carried on under the supervision of a Highways Commission and that the Provincial Highways should be constructed by the Government Commission, and the greater percentage of cost borne by the Provincial and Dominion Governments. County Roads should receive a reasonable percentage from the Government for construction and maintenance

system arranged for. For the maintenance of the Provincial Highways we strongly urge a horsepower tax to be placed upon the automobile, and that that tax be used by the Government for the maintenance of Provincial Highways.

In conclusion, we wish to call the attention of the Honourable Commission to the deplorable condition of what is known as the Lake Shore Road, between Toronto and Hamilton. We wish to state further that this is one of the most important roads in the Province of Ontario, a distance of about 35 miles, with the city of Toronto, 450,000 population, at one end, and the city of Hamilton, 100,000, at the other, with an intervening population of over 10,000, with land that is being used for fruit and truck gardening purposes, and where every foot of this land could be brought under intensive cultivation for fruit and truck gardening purposes. If a proper highway were constructed and connecting up Hamilton and Toronto, it would be the means of bringing together more producers and consumers than any other road of a like distance in the Province of Ontario. With good roads, fruit and vegetables will be handled at long distances by motor truck direct from the producer to the consumer. We strongly urge upon your Honourable Commission that when you have worked out a general improved highways scheme, that the Lake Shore Road between Toronto and Hamilton be one of the first roads to be constructed.

This Council hereby appoints a deputation consisting of the Mayor, the Reeve and the Deputy-Reeve to present this resolution to the Ontario Highways Commission at their Toronto sitting.

IV. The Caradoc Indian Reserve.

Moved by Chief John L. Case,
Seconded by W. F. Timothy.

That this Council respectfully request the Provincial Highway Commission to include in their report plans for the improvement of roads on Indian Reserve, especially where they form extensions of improved Highways.

(Sgd.) Chief L. Case,
W. F. Timothy,
Geo. E. Dolson.

Moved by Chief Wilfrid Riley,
Seconded by Job Fisher.

That this Council respectfully request the Provincial Highways Commission to include in their Report plans for the improvement of roads on Indian Reserves, especially where they form extensions of improved highways.

(Sgd.) Chief Wilfrid Riley.
Johnson Groslech.
Elijah Burch.
Job Fisher.
Geo. Fisher, Sr.
Richard Simon.

V. Board of Trade of

(1) GUELPH.

Whereas a general movement in the Province and in the country at large is being manifested for the construction of highways adequate to modern traffic requirements,

And whereas the building and maintenance of such highways would facilitate communication and prove a great economic saving and social advantage to the Province,

And whereas it is advisable that all public bodies should concur in this movement,

And whereas the Province of Ontario has 50,000 miles of public roads of which less than 20 per cent. if permanently constructed would accommodate 80 per cent. of the traffic;

Be it therefore resolved:

That this body put itself on record as favouring highway betterment and the raising of the standards of road construction in general, and as urging the necessity of constructing leading highways, uniting county systems and the establishing of an organization for permanently maintaining the same under Government supervision.

(2) HAMILTON (WITH MANUFACTURERS' ASSOCIATION).

We, the members of the Hamilton Board of Trade and the Manufacturers' Association, having met in joint committee and realizing the great importance of better roads in our Province, beg to suggest the following for the consideration of your Commission:—

(1) We would suggest that our main leading roads be made Provincial Highways to be constructed and maintained by the Provincial Government under the supervision of a Highways Commission. The construction to be of a permanent nature, suitable for the present day traffic and for the traffic that is likely to follow the construction of these permanent roadways.

(2) For financing the construction of these Provincial Roadways, we believe that the property benefited by such roads should be assessed 25 per cent. of the cost, to be spread over a reasonable number of years. The cities, towns and villages that are connected with the Provincial Highways also to pay 25 per cent. of the cost, to be apportioned on the basis of population. The balance of 50 per cent. to be paid by the Provincial Government. We are, however, strongly of the opinion that the Dominion Government should assist by paying a portion of this 50 per cent.

(3) For maintenance, we believe that a reasonable tax should be placed upon automobiles, motor trucks, etc., and that the proceeds of this tax should be used by our Provincial Government for the maintenance of Provincial Roadways. The maintenance also to be under the supervision of the Government Highway Commission.

(4) We believe that there should be a most comprehensive system of feeders leading to Provincial Highways. We believe that the Highways Commission should assist the counties in the selection of roads best adapted for feeders. These roads should be known as County Roads and financed as at present, by the Government paying one-third of the cost.

(5) We are of opinion an organized movement embodying a road scheme sufficiently comprehensive to meet the requirements of the older portions of the Province could not be made effective at once.

(6) We therefore respectfully urge that some of the most important roads such as the Toronto-to-Hamilton permanent highway should be started immediately following the formulation of a general road scheme by the Government, thus allowing the Commission to gradually inaugurate a road construction and maintenance organization..

(3) OAKVILLE.

Moved by W. A. Buckle,
Seconded by Alfred Hillmer.

That the Oakville Board of Trade, which represents all the business interests of the town and district, beg to lay before the Ontario Highway Commission our Board's unanimous recommendation that the Provincial Government should assume and maintain certain main or through highways. The growing trade and commercial interests demand a class of highway on which traffic will not be interrupted no matter what the weather conditions may be. A period of bad roads means more and more interruption to business, and the manufacturer, merchant, labourer and the consumer are all detrimentally affected by the impossibility of the rapid transfer of goods. To ask local municipalities to provide such permanent highways, to be used largely for outside traffic, is placing an unfair burden on such municipalities. The case of the Lake Shore Road between the large cities of Toronto and Hamilton is a striking example, as over it could easily be conveyed by large motor trucks manufactured articles and all kinds of goods, as well as the fruit, vegetables and produce from the small farms along the line, not forgetting the growing importance of tourist traffic on this particular road which passes through a most attractive section of country. As our members feel your Government wish to serve the greatest number of people with any road, we beg to bear testimony to the fact that a permanent highway along the Lake Shore would prove of the greatest benefit to all the interests of our growing town as well as the community.

Our Board appoints a delegation composed of our President, W. A. Ferrah, W. C. Davis, Councillor C. W. Evans and R. B. Barclay, to lay the resolution before the Ontario Highway Commission at their Toronto sitting.

(4) ONTARIO ASSOCIATED BOARDS OF TRADE.

Resolved:

That every effort should continue to be made to carry on the campaign for good roads, more especially in the avenues of trade between the towns and cities and the source of supply, the country round about; and free and well-protected markets should be encouraged at all centres of trade.

That this Board heartily approves of the scheme outlined in the speech by the Lieutenant-Governor at the opening of the Ontario Legislature on February 4th in which the Government contemplates expending a large amount of money not only towards the cost of building, but also to the maintenance of the roads throughout the older sections of Ontario, and respectfully submits that the appointment of a competent Royal Commission to investigate and report upon conditions and requirements, and as to the best methods of administering and considering such works, would attain the most efficient and equitable results.

That we respectfully urge upon the Government of Ontario that they co-operate with the municipalities in and about provincial institutions in various portions of the Province in the construction of good roads in and about the said institutions, and use as far as possible the institution labour and materials thereon.

VI. Motor Associations.

(1) HAMILTON AUTOMOBILE CLUB.

Resolved:

That we, the executive of the Hamilton Automobile Club, at a meeting held on November 10th, thoroughly understand and realize the importance of improved highways, and are willing to assist the Commission which has been appointed for this purpose in going so far as to say that we believe the Government and the cities, towns and villages that are connected up with a permanent highway and townships through which the highway passes, and that all properties fronting on and benefiting by it should share in the cost of construction and maintenance.

That the highways selected by the Provincial Government should be constructed and maintained by the Provincial Government under the supervision of the Commission, and that a reasonable tax should be placed on automobiles and all other vehicles according to a scale to be determined by the Commission.

(2) OTTAWA VALLEY MOTOR CAR ASSOCIATION.

Whereas every civilized nation is awakening to the inestimable commercial, industrial and social value of Good Roads, and is taking immediate steps toward such an end;

And Whereas the Dominion of Canada, federally, and the provinces, individually, are rapidly developing the matter of Good Roads as an integral part of their future policy;

And Whereas the city of Ottawa being the capital of Canada and a point of common interest to the whole Dominion is surrounded by roads which are a discredit to our status as a city and to the plane of civilization which we believe we occupy; that it is shut out from the outside world and particularly from the great country to the southward which has thousands of miles of the finest state roads leading right up to the border at Ogdensburg; that thousands of American tourists annually come to this limit and depart without paying our capital a visit, whereby we lose our share of the most profitable business, the tourist trade; that the sole and only difficulty in the way is some sixty miles of bad roads between Ottawa and Prescott;

Be it resolved:

That in the opinion of this Association the building of the Ottawa-Prescott Tourist Road is an immediate necessity, and should be immediately dealt with as an emergency inlet to Canada's capital, aside from any provincial road policy, and that the proposed route *via* the Experimental Farm, Manotick, North Gower, Beckett's Landing, Kemptville and Spencerville be approved.

VII. Ontario Good Roads Association.

(1) That the roads of the Province should be classified as township, county and main highways, and the latter two be designated, constructed and maintained under the provisions of the Highway Improvement Act, and that specifications for the construction of each be varied accordingly and approved by the Public Works Department before work is commenced.

(2) That the Municipal Act should be amended to compel all municipalities to appoint a Road and Bridge Commissioner, and that the Highway Commission define the duties of said officer.

(3) That with a view to increasing the permanency of municipal councils, the Municipal Act should be amended to provide for the specific designation of each member for nomination and election purposes—as reeve, deputy reeve, first, second and third councillor, or as the case may be.

(4) That the use of wagons with wide tires be made compulsory on all highways.

(5) That provincial aid for the construction and maintenance of roads under the Highway Improvement Act should be at least fifty per cent. of the cost.

(6) That a tax should be levied on all motor vehicles and the Supplementary Revenue Act amended by increasing the taxation of railways to provide a fund for the maintenance of improved highways.

APPENDIX No. 3

Summary of Evidence Presented to the Commission.

The following is a brief summary of the features in evidence given before the Commission at its public meetings held in Ottawa, Belleville, Hamilton, London, Berlin, Guelph and Toronto, when representatives of municipalities and interested associations responded to the invitation to express their views on the road question.

(1) Statute Labour.

The Eastern Municipalities are in favour of the abolition of Statute Labour, so far as construction is concerned; it is useful, however, for maintenance purposes. The Central and Western municipalities are satisfied with commutation according to township. The present system can be made efficacious by means of proper supervision of pathmasters by township road commissioners. In cases where Statute Labour is commuted, care should be taken to ensure a sufficient road fund.

(2) Trunk and Market Roads.

In localities where a trunk road would serve not only important tourist and through motor traffic for commercial purposes, but would form in a rich agricultural country a basis upon which a system of rural feeders could be established, the trunk road is considered favourably by the entire community. Trunk roads however, which have little local traffic, are so great a burden upon the ratepayers that any increased expenditure upon them should concern the Province alone. The construction of a trunk line or lines not necessarily interurban but extending throughout the Province, must not conflict with the present railway systems, but should, if possible, in agricultural country, feed the railways, and connect as many local centres as possible. At the present time the chief need of the Province is a system of local market roads, with specifications of sufficient high standard to bring marketing facilities throughout the Province to a uniform state of efficiency. To achieve this result with the greatest economy, local roads not serving market purposes should rest with the municipalities for maintenance.

(3) Road Construction.

For main-travelled country roads, the present method of construction is generally sufficient. For interurban highways beyond the three mile limit of cities, concrete or bituminous-bound macadam would be a proper material. For greatly travelled interurban roads and within the three mile limit, concrete foundations are recommended. Where gravel is in abundance this material may be used to make very satisfactory county roads. With regard to unsurfaced highways, emphasis should be laid on the need of proper drainage. For both County and

Township roads, Government specifications sufficiently elastic to admit of local deviations would be valuable; this should also entail Government inspection.

(4) Maintenance.

The Province should contribute towards the maintenance of approved roads and should establish for the carrying out of the work efficient patrol systems. It should also encourage by financial and other assistance the use of the split-log drag on unsurfaced township roads. The Eastern municipalities are inclined to favour Government control of maintenance but those in the Western section of the Province desire as much as possible the local management of highways.

(5) Automobiles.

A tax should be placed upon automobiles and other motor vehicles according to horse power or weight without, however, penalizing this sort of traffic. Motorists are willing to pay a tax of approximately 40 cents per horse power. Other suggestions include a tax of:—

(*a*) 50c. up to 20 h.p.; 75c., 21 to 30 h.p.; $1.00, 31 h.p. and over, on both automobiles and trucks.

(*b*) A tax of $1.00 per h.p. (stated by motorists to be excessive).

(*c*) A tax averaging between $25 and $30.

The fund derived from this revenue should be devoted to road repair (including oiling of through highways) and might be expended by the Province on trunk roads only, or on being returned to the municipalities from which it is derived, might very well be spent locally.

(6) Organization.

The central authority might be vested in the present Department of Public Works or in a separate Department of Highways or in a permanent Commission. Roads should fall into a threefold classification, according to traffic requirements, i.e., main, county and township roads. Each county might have a County Commission consisting of a permanent Chairman, the road Superintendent and a County Councillor. The position of cities and towns separated from the county for municipal purposes as contributors to a county scheme on the one hand, and that of smaller towns and villages as beneficiaries of a county scheme must be readjusted. In this way county roads would be better financed and the system carried through cities, towns and villages in any county without interruption. To this end, the Province should fix not only the proportion of the cost of construction and maintenance to be paid by the larger urban municipalities on the basis of a metropolitan area of approximately 20 miles radius outside cities of over 100,000 population, but also to assist as far as possible the smaller towns and villages. Operation under the Colonization Road Act in the Northern townships of Old Ontario should remain unchanged.

(7) Government Assistance.

A definite schedule of Government aid according to traffic requirements and material to be used should be fixed, with a percentage of aid in construction varying from 50 per cent. to 66 2-3 per cent., and a maintenance grant of a

proportionate amount. In return for this assistance, municipalities should comply with Government specifications and inspection. The suggestion is made that the Government should also endorse municipal highway bonds for permanent roads. Any scheme for Government aid should not be limited to the present County Road System but should be extended to municipalities on the basis of assessed values with a benefit to as many local units as possible. This method of Government aid might be brought into effect without deranging the present county road system, towards which grants of one-third of construction costs might be continued.

(8) Assessment.

If any further tax on benefited property is imposed, it should be made as light as possible, and be distributed over a road improvement strip with the rate decreasing according to distance from the road in question. In the case of inter-urban highways a local improvement plan would be equitable, provided that a large proportion of the cost rested upon the cities themselves. As regards the general question of assessment, the present Act could be made much more effective if some control were placed over the individual assessors, in order to secure uniformity of taxation; and some equalization of assessed values both on land and buildings is necessary, the present county equalization system not being satisfactory in every case.

(9) Tenure of Municipal Office.

A guarantee of efficient service on the part of township road officials can only be brought about by a reasonably long term of office; for municipal officials a term of two or three or even five years is advocated, or in the case of road commissioners, holding of office during satisfactory service.

(10) Railways.

A fund either for general or for highway purposes should accrue to the Province from a tax upon railways heavier than the existing general property tax, which is a greater burden on farm lands than on those of the railway corporations.

(11) Wide Tire Legislation.

A minimum width of 4 inches should be made compulsory for all vehicles using improved highways. A gradual introduction of the long hind axle is suggested.

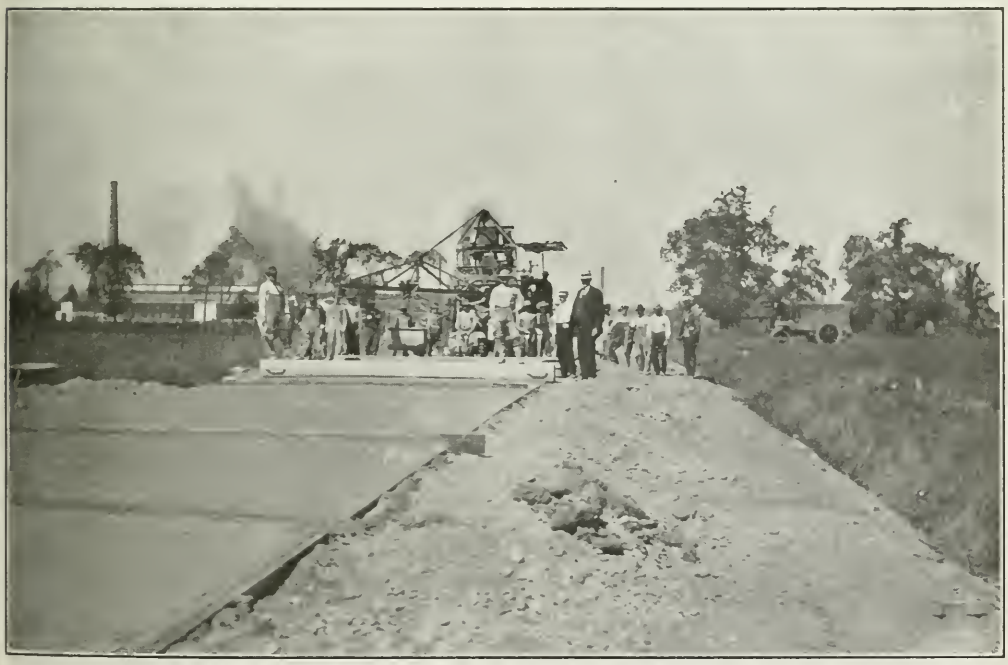
(12) Bridges.

The township should be relieved from bridge maintenance, which should devolve upon either the county or the province according to the width of span. Counties with heavy bridge expenditure require special grants.

(13) Aid for Particular Roads.

1. Government construction and maintenance is requested for a trunk road from Severn Bridge to North Bay through Muskoka and Parry Sound Districts.

A Reinforced Concrete Bridge with Concrete Railing. In Markham Township, County of York.



Concrete Road Construction at Sarnia, Ontario.

2. Government maintenance is asked for:

(*a*) Dundas Street.

(*b*) Kingston Road as part of the Toronto-Montreal route.

(*c*) The Queenston and Grimsby Stone Road, to be maintained as an International Highway.

(*d*) The Bay of Quinte, Trenton and Belleville Bridges on the Toronto-Montreal route.

3. Extraordinary grants are asked for:

(*a*) The Lake Shore Road (Hamilton-Toronto Permanent Highway). Immediate repair of this road is necessary.

(*b*) The Ottawa-Prescott Road.

(*c*) The Toronto-Montreal Highway in general, including the section from Kingston to Prescott.

(*d*) The Longwoods Road, Talbot Street and the London-St. Thomas Road.

(*e*) Roads from Ottawa to Prescott and L'Original.

4. Government assistance for the following market roads:

(*a*) Galt to Elmira, passing through Preston and Berlin; this should be one of the first market roads designated.

(*b*) From Tillsonburg to London.

APPENDIX No. 4

Road Mileage Tables

Total Mileage Returns	56,138.00
Total Revised Returns, 1913	54,349.25
Total (Office Map Measurement)	58,383.00
Improved Stone Road	2,718.87
Improved Gravel Roads	18,465.41
Well Graded Earth Roads	19,871.71
Under County Roads Systems	3,688.62
Steam Railways	5,648.21
Electric Railways	321
Post Offices	3,007

ROAD MILEAGE TABLES

Township	Total Return (1907 Returns)	Total Revised Returns, 1913	Total (Office Map Measurement)	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Brant:											
Brantford	213	216	123	.....	27	.....	.....	53.	15.4	26.7	6
Burford	215	210	192	.....	150	50	.....	30.6	8.9	18.7	9
Dumfries S	108	117½	136	10	40	60	.....	9.65	.....	23.1	6
Oakland	30	32	34	.....	.....	32	.....	6.5	.....	24.5	1
Onondaga	69	69	54	.....	.....	30	.....	9.65	.....	14.3	9
								109.40	24.3		
Bruce:											
Albemarle	125	130	163	.....	30	5	.....	.....	.....	9.3	7
Amabel	142	190	190	2	75	55	.....	9.6	.....	24.8	9
Arran	140	152	145	.....	130	15	.....	9.5	.....	14.7	4
Brant	207	200	200	.....	165	20	.....	19.6	.....	16.8	9
Bruce	169	184	175	.....	110	50	.....	2.5	.....	15.4	7
Carrick	325	220	184	.....	25	100	.....	11.6	.....	12.7	4
Culross	160	160	156	.....	10	.....	.....	3.3	.....	13.6	2
Eastnor	86	73	137	.....	20	30	.....	.....	.....	18.	5
Elderslie	140	160	199	.....	150	10	.....	12.5	.....	14.	4
Greenock	120	128	200	.....	100	.....	.....	1.25	.....	20.5	9
Huron	155	171	161	.....	77	65	.....	11.5	.....	19.1	9
Kincardine	170	.....	197	.....	.....	.....	.....	1.35	.....	14.4	9
Kinloss	141	141	128	.....	100	41	.....	11.4	.....	13.4	6
Lindsay	76	70	169	.....	25	20	.....	.....	.....	15.6	4
St. Edmonds	.....	.....	147	.....	.....	.....	.....	.....	.....	.....	2
Saugeen	105	100	116	.....	81	21	.....	13.1	.....	13.4	6
								107.20			
Carleton:											
Fitzroy	150	150	132	.....	10	5	26.25	12.	.....	14.9	6
Gloucester	255	255	204	57	30	60	34.4	17.25	.....	26.4	20
Goulburn	192	.....	176	.....	65	50	32.5	12.	.....	11.8	8
Gower N	80	80	96	7	4	60	24.25	1.18	.....	23.1	8
Huntley	180	185	129	¼	30	100	21.	7.12	.....	11.7	8
March	84	84	74	.....	15	50	10.7	3.95	.....	11.	5
Marlborough	168	92	118	.....	35	50	15.	.....	.....	7.9	4
Nepean	184	198	185	27	30	65	39.	31.6	.....	27.9	18
Osgoode	273	264	264	45	5	150	37.75	8.75	.....	15.1	14
Torbolton	78	62	52	.....	1¾	10	11.4	.....	.....	10.8	4
								93.85			
Dufferin:											
Amaranth	150	180	177	1	35	130	.....	20.	.....	14.8	6
Garafraxa E	146	146	120	.....	16	.....	.....	4.75	.....	11.	5
Luther E	84	84	91	2	30	52	.....	5.25	.....	19.2	6
Melancthon	168	240	214	5½	120	115	.....	9.65	.....	19.	9
Mono	225	224	193	.....	100	100	.....	3.15	.....	12.	10
Mulmur	198	198	198	.....	40	60	.....	.....	.....	13.2	18
								42.80			
Dundas:											
Matilda	125	150	138	15	15	120	.....	7.5	.....	28.5	12
Mountain	100	100	127	18	50	32	.....	7.5	.....	28.2	8
Williamsburg	177	191	125	50	90	20	.....	7.5	.....	18.5	15
Winchester	168	166	117	20	80	10	.....	8.	.....	.....	7
								30.5			

Township	Total Returns (1907 Returns)	Total Revised Returns, 1913	Total (Office Map Measurement	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Durham:											
Cartwright	96	96	103	.....	32	64	.....	10.8	.....	19.1	7
Cavan	189	189	148	.....	75	130	.....	23.5	.....	11.5	8
Clarke	280	280	270	.....	85	150	.....	18.45	.....	11.6	9
Darlington	204	.....	269	.....	175	140	.....	27.15	.....	17.8	12
Hope	189	199	248	.....	40	159	.....	33.6	.....	14.7	11
Manvers	207	175	236	.....	30	40	.....	15.5	.....	13.3	14
								129.00			
Elgin:											
Aldborough	225	230	230	.....	75	135	.....	22.4	.....	21.1	6
Bayham	165	127	127	.....	25	155	.....	18.	.....	19.5	8
Dorchester, S	90	100	91	2½	35	60	.....	2.6	.....	17.1	2
Dunwich	204	182	182	.....	20	180	.....	20.	.....	13.7	6
Malahide	158	150	191	5	45	80	.....	15.8	.....	21.1	11
Southwold	216	216	230	.....	126	90	.....	41.2	6.	11.8	10
Yarmouth	180	200	231	.....	50	150	.....	22.2	9.6	22.9	1
								162.2	15.6		
Essex:											
Anderdon	69	69	76	½	2	20	.....	7.5	5.5	27.7	4
Colchester, N	88	87	122	.....	15	72	.....	16.5	1.	20.6	6
Colchester, S	70	102	97	.....	15	.....	.....	7.1	.....	39.	3
Gosfield, N	95	95	84	.....	58	37	.....	.....	6.4	20.2	2
Gosfield, S	70	70	89	.....	40	30	.....	9.2	9.4	29.6	4
Maidstone	150	150	108	.....	50	10	.....	23.3	3.	18.6	5
Malden	65	.....	67	2	18	10	.....	.....	0.5	21.8	3
Mersea	120	150	165	.....	25	100	.....	19.7	3.	31.2	7
Rochester	86	93	108	.....	.....	.....	.....	18.1	.....	24.6	6
Sandwich, E	54	64	64	2	22½	29	.....	20.5	10.5	50.1	5
Sandwich, S	69	69	76	.....	53	16	.....	12.5	6.5	22.5	3
Sandwich, W.	100	100	81	2	40	.....	.....	7.5	12.5	22.7	7
Tilbury, N	60	60	79	.....	.....	50	.....	19.3	.....	32.5	1
Tilbury, W	52	56	66	.....	.....	56	.....	11.1	.....	33.9	3
Pelee Island	.....	50	.....	10	35	35	.....	.....	.....	.....	....
								172.3	58.3		
Frontenac:											
Barrie	50	40	36	.....	.....	20	.....	.....	.....	9.	3
Bedford	189	190	155	.....	.....	150	.....	1.15	.....	6.4	6
Clarendon and Miller	100	90	73	.....	.....	15	.....	.....	.....	8.6	4
Hinchinbrooke	90	90	101	2	6	15	.....	12.35	.....	14.4	9
Howe Island	25	23	23	3	.....	10	.....	.....	.....	10.5	2
Kennebec	90	90	77	.....	.....	30	.....	10.65	.....	12.	3
Kingston	200	200	145	13¾	186¼	.....	24.6	25.4	.....	13.3	13
Loughborough	150	110	108	.....	40	64	12.3	.....	.....	11.1	7
Olden	115	120	110	.....	40	35	.....	10.45	.....	9.3	3
Oso	100	100	57	.....	100	10	.....	19.3	.....	11.7	7
Palmerston	90	100	66	.....	15	20	.....	11.7	.....	9.2	7
Pittsburg	85	100	78	40	.....	60	.....	10.55	.....	24.4	13
Portland	250	126⅘	108	63	84	.....	.....	19.50	.....	7.5	7
Storrington	100	120	111	60	40	90	.....	.....	.....	17.2	6
Wolfe Island	90	90	97	2	4	10	.....	.....	.....	14.3	5
								121.05			
Glengarry:											
Charlottenburg	200	200	120	5	2	.....	.....	13.25	.....	24.7	15
Kenyon	231	231	133	.....	110	50	.....	14.15	.....	16.8	6
Lancaster	171	150	116	.....	5	.....	.....	12.75	.....	20.3	10
Lochiel	200	200	127	.....	50	150	.....	17.75	.....	21.4	11
								57.90			

Township	Total Return (1907 Returns)	Total Revised Returns 1913	Total (Office Map Measurement)	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Grenville:											
Augusta	222	200	191	110	20	70	26.00	9.87	.....	15.4	15
Edwardsburg	360	140	140	15	10	.....	25.50	22.00	.....	10.7	11
Gower, S	60	46	49	.....	20	20	.....	4.2	.....	12.2	3
Oxford-on-Rideau	177	178	164	15	60	102	21.25	18.96	.....	13.6	13
Wolford	130	130	99	13	40	40	13.00	2.76	.....	10.5	5
								57.79			
Grey:											
Artemesia	201	220	163	.....	26	150	.....	16.25	.....	15.	7
Bentinck	225	225	220	.....	125	100	.....	19.35	.....	12.8	11
Collingwood	130	153	170	8	71¼	73¾	.....	12.25	.....	26.5	11
Derby	82	113	109	20	55	10	.....	.....	.....	22.	6
Egremont	150	176	196	.....	.....	120	.....	10.95	.....	18.3	10
Euphrasia	216	184	184	25	125	35	.....	.....	.....	12.5	10
Glenelg	150	149	200	3	26	120	.....	10.9	.....	15.5	1
Holland	204	.....	169	.....	140	.....	.....	17.1	.....	11.3	9
Keppel	187	200	213	15	40	50	.....	13.	.....	19.1	12
Normanby	240	240	177	.....	40	100	.....	10.75	.....	14.	8
Osprey	110	110	183	.....	75	25	.....	.....	.....	22.6	11
Proton	240	216	216	.....	125	125	.....	6.25	.....	15.3	1
St. Vincent	189	.....	171	.....	.....	.....	.....	4.15	.....	13.1	10
Sarawak	51	36	36	1	19	16	.....	3.75	.....	29.7	3
Sullivan	150	155	191	.....	140	15	.....	.....	.....	18.3	11
Sydenham	160	160	222	34	70	56	.....	10.5	.....	19.7	12
								135.20			
Haldimand:											
Canborough	63	63	50	.....	.....	25	9.5	15.6	.....	13.3	2
Cayuga, N	96	96	96	1	.....	50	14.7	23.9	.....	15.5	4
Cayuga, S	39	43	49	.....	.....	20	6.00	.....	.....	17.6	3
Dunn	40	40	43	4	4	28	8.00	.....	.....	17.5	1
Moulton	100	100	78	5	.....	75	7.50	17.6	.....	17.8	6
Oneida	96	93	100	.....	.....	50	15.2	17.5	.....	13.2	6
Rainham	70	70	74	.....	.....	10	11.4	0.5	.....	23.3	5
Seneca	160	160	103	.....	.....	50	2.6	18.	.....	10.2	5
Sherbrooke	20	20	25	.....	12	7½	.....	.....	.....	16.2	1
Walpole	198	210	156	5	6	100	37.4	22.	.....	.....	10
								115.1			
Haliburton:											
Anson and Hindon	30	35	11	.....	5	25	.....	.....	.....	17.8	....
Cardiff	76	25	81	.....	.....	10	.....	8.69	.....	7.8	3
Dysart	200	120	122	.....	40	80	.....	8.6	.....	4.8	3
Glamorgan	100	54	42	.....	2	10	.....	11.06	.....	5.	2
Lutterworth	60	60	52	.....	.....	.....	.....	.4	.....	6.6	2
Minden	108	110	85	.....	.....	70	.....	.....	.....	10.8	5
Monmouth	50	70	71	.....	11	5	.....	11.85	.....	11.3	5
Sherborne	.....	25	25	1½	6½	32	.....	.....	.....	.....	....
Snowden	105	120	46	.....	.....	25	.....	23.70	.....	6.2	4
Stanhope	80	80	51	.....	.....	.....	.....	.....	.....	5.7	5
								64.30			
Halton:											
Esquesing	198	203	203	10	41	50	71.25	25.25	.....	18.3	13
Nassagaweya	133	124	120	10½	60	30	40.35	15.35	.....	16.	5
Nelson	138	142	137	20	12	90	24.2	15.15	7.	18.8	11
Trafalgar	198	198	161	13	.....	75	40.00	24.8	5.55	16.7	11
								80.55	12.55		

Township	Total Return (1907 Returns)	Total Revised Returns, 1913	Total (Office Map Measurement)	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Hastings:											
Bangor Wicklow& McCl	80	45	76	.....	.....	20	.....	10.66	.....	12	3
Carlow	50	50	54	.....	3	25	.....	.....	.....	13.6	5
Dungannon	100	103	69	½	.....	15	.....	15.8	.....	7.	6
Elzevir & Grimsthorpe.	72	73	53	.....	21	11	28.20	25.67	.....	18.1	3
Faraday	75	75	56	.....	.....	35	.....	3.16	.....	11.4	5
Hungefgord	175	375	212	.....	72	115	81.15	26.8	.....	20.5	13
Huntinrdon	50	106	118	.....	41	65	40.5	21.3	.....	41.3	6
Limerick	50	50	64	1	5	20	.....	13.8	.....	90.8	3
Madoc	100	96	134	.....	42	25	52.31	25.67	.....	27.2	7
Marmora & Lake	75	112	109	15	30	25	24.00	21.3	.....	22.3	7
Mayo	48	50	56	.....	3	22	.....	1.18	.....	10.2	4
Monteagle & Herschel.	50	85	126	.....	.....	8	.....	19.75	.....	32.6	7
Rawdon	150	150	147	25	175	.....	41.2	27.65	.....	18.6	8
Sidney	200	200	185	.....	200	.....	66.00	19.75	.....	20.6	9
Thurlow	120	130	130	34	75	21	55.80	20.54	.....	29.7	10
Tudor & Cashel	100	100	68	25	.....	75	.....	13.8	.....	7.8	6
Tyendinaga	200	200	216	.....	135	65	62.25	10.9	.....	16.3	12
Wollaston	50	69	74	.....	.....	60	.....	4.7	.....	16.3	3
								282.43			
Huron:											
Ashfield	189	189	153	.....	180	9	.....	.....	.....	14.3	11
Colborne	125	94	94	.....	70	17	.....	7.4	.....	12.3	7
Goderich	156	120	166	.....	95	25	.....	16.5	.....	13.1	5
Grey	200	168	241	.....	50	100	.....	8.75	.....	15.4	7
Hay	110	150	117	.....	110	.....	.....	7.25	.....	28.8	7
Howick	201	201	191	.....	150	100	.....	11.1	.....	17.6	8
Hullett	135	118	140	.....	75	12	.....	15.3	.....	17.7	4
McKillop	137	137	137	.....	12	50	.....	.....	.....	17.1	9
Morris	162	143	143	.....	75	40	.....	29.2	.....	13.8	2
Stanley	112	110	120	.....	75	25	.....	8.75	.....	16.4	3
Stephen	150	150	145	1	100	40	.....	6.2	.....	23.8	12
Tuckersmith	127	127	111	20	72	10	.....	10.7	.....	16.3	5
Turnberry	87	92	104	.....	76	16	.....	17.7	.....	21.1	4
Osborne	126	154	119	.....	131	3	.....	.....	.....	15.9	8
Wawanosh, E.	100	85	91	.....	70	15	.....	.....	.....	16.6	3
Wawanosh, W	100	.....	91	.....	60	11	.....	.....	.....	18.5	6
								138.85			
Kent:											
Camden	120	160	44	1	5	80	.....	7.8	.....	19.3	5
Chatham	240	268	185	.....	.....	250	.....	1.91	1.05	18.1	11
Dover	204	280	185	.....	.....	200	.....	.....	14.1	19.4	9
Harwich	300	250	249	.....	75	150	.....	45.7	15.37	16.2	12
Howard	138	137	154	.....	69	68	.....	16.5	.....	20.6	3
Orford	160	160	137	.....	120	140	.....	12.	.....	15.6	7
Raleigh	210	220	211	.....	25	100	.....	38.85	6.38	19.6	12
Romney	57	66	73	.....	33	33	.....	9.15	.....	28.4	5
Tilbury, E.	180	180	137	.....	6	90	.....	24.85	.....	16.1	7
Zone	72	72	52	.....	10	20	.....	14.85	.....	15.7	2
								171.61	36.90		
Lambton:											
Bosanquet	210	209	185	.....	55	.....	.....	11.65	.....	11.6	7
Brooke	170	165	205	.....	70	80	.....	22.8	.....	17.7	8
Dawn	205	202	202	.....	.....	174	.....	1.4	.....	15.1	11
Enniskillen	246	218	218	.....	50	130	.....	25.8	.....	16.	8

Township.	Total Return (1907 Returns)	Total Revised Returns, 1913	Total (Office Map Measurement)	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Lambton—Continued											
Euphemia	125	125	148	.....	2	.....	.....	5.	.....	14.6	5
Moore	200	200	188	.....	118	82	.....	23.75	.....	19.1	12
Plympton	208	208	208	.....	65	.....	.....	27.4	.....	15.	7
Sarnia	108	100	193	.....	60	90	.....	34.4	.....	17.9	4
Sombra	224	200	227	.....	25	100	.....	11.25	.....	16.2	12
Warwick	210	210	189	.....	170	40	.....	14.35	.....	13.1	5
								178.00			
Lanark:											
Bathurst	80	103	143	9	35	30	17.7	11.6	.....	24.2	9
Beckwith	60	73	127	14	.....	6	12.5	16.78	.....	24.8	3
Burgess, N.	20	75	64	6	.....	25	4.4	.....	.....	35.6	4
Dalhousie & Sher. N.	60	175	150	.....	50	50	6.25	.....	.....	28.5	7
Darling	40	50	51	.....	4	20	5.0	.....	.....	16.6	6
Drummond	80	100	128	20	2	5	22.2	.....	.....	21.7	10
Elmsley N.	60	63	63	14	1	48½	6.	9.00	.....	13.9	4
Lanark	90	150	151	2½	7½	50	8.75	.....	.....	17.7	10
Lavant	35	45	47	.....	3	.....	7.5	13.8	.....	11.6	5
Montague	82	100	163	12	3	5	.....	19.3	.....	22.3	4
Pakenham	50	116	95	4	23	45	6.25	7.9	.....	33.5	3
Ramsay	75	110	182	30	20	70	21.25	11.8	.....	26.1	8
Sherbrooke, S.	45	65	65	2½	1¾	10	3.25	7.9	.....	15.8	3
								96.40			
Leeds:											
Bastard and Burgess	205	126	126	15	10	97	18.0	7.8	.....	11.5	10
Crosby, N.	132	132	84	5	35	92	8.5	5.5	.....	7.4	5
Crosby, S.	111	80	80	6	8	53	9.8	4.	.....	13.	5
Elizabethtown	225	208	208	45	10	137	28.	37.9	.....	16.1	15
Elmsley, S.	66	66	47	16	.....	10	8.	2.35	.....	10.4	1
Escott Front	125	125	51	10	10	20	.....	4.74	.....	6.7	8
Kitley	100	139	139	25	5	111	15.	4.54	.....	16.6	5
Leeds and Lansdowne	100	100	259½	50	25	25	.....	.....	.....	47.2	6
Yonge Front	165	55	82	20	.....	.....	8.90	6.91	.....	7.4	4
Yonge and Escott Rear	50	50	60	30	.....	10	8.50	1.11	.....	7.	16
								80.85			
Lennox and Addington:											
Adolphustown	20	43	43	.....	23	.....	14.75	.....	.....	26.1	5
Amherst Island	35	28	47	.....	18	28	.....	.....	.....	21.2	2
Camden, E.	255	255	110	200	40	55	48.	15.25	.....	14.6	15
Denbigh Abinger and A.	175	180	78	.....	.....	150	.....	.....	.....	4.6	4
Ernesttown	60	100	153	.....	70	30	28.00	11.25	.....	44.1	10
Fredericksburg, N.	70	70	76	.....	10	60	24.6	5.5	.....	19.3	14
Fredericksburg, S.	45	45	34	15	.....	.....	11.25	.....	.....	21.	....
Kaladar Anglesea & E	100	125	6	.....	.....	10	.....	10.75	.....	10.4	5
Richmond	150	135	136	.....	60	20	32.5	16.65	.....	14.5	8
Sheffield	185	120	135	25	50	30	16.5	1.35	.....	10.7	4
								60.75			
Lincoln:											
Caistor	84	86	116	.....	.....	40	.....	.....	.....	17.2	7
Clinton	75	82	138	11	.....	60	6.5	6.25	3.25	23.7	4
Gainsborough	148	150	140	.....	.....	25	.....	8.75	.....	13.6	8
Grantham	54	94	116	10	6	78	4.00	10.9	9.	36.9	6
Grimsby, N.	60	72	69	14	4	55	6.5	8.25	6.8	23.3	7
Grimsby, S.	60	70	91	4½	.....	30	.....	7.	.....	21.2	....
Louth	90	147	147	12	4	.....	6.6	6.4	1.25	19.	4
Niagara	120	121	131	22	.....	50	5.4	10.	2.	13.5	4
								57.55	22.30		

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Middlesex:											
Adelaide	150	150	108	8	92	50	16.2	8.5	.....	12.	8
Biddulph	110	100	118	.....	50	75	10.00	9.4	.....	17.8	5
Caradoc	175	187	217	5	50	114	14.3	32.8	.....	17.9	8
Delaware	69	90	79	.....	55	35	8.4	3.6	.....	18.6	5
Dorchester, N.	150	150	88	.....	20	100	13.5	17.1	.....	22.1	7
Ekfrid	170	142	160	2	60	80	12.5	38.	.....	14.1	11
Lobo	223	180	158	16	164	.....	18.6	12.9	.....	10.9	6
London	297	346	325	.....	328	18	36.6	44.7	.....	27.1	23
McGillivray	144	147	165	3	100	20	19.00	14.4	.....	17.4	10
Metcalfe	108	108	97	2½	55	50	7.00	4.	.....	12.6	4
Mosa	165	165	148	2	50	50	11.00	24.4	.....	11.5	5
Nissouri, W.	114	114	152	.....	85	25	16.1	19.	.....	22.	9
Westminster	140	192	192	1½	160	25	24.50	9.2	11.7	32.9	14
Williams, E.	144	122	102	.....	113	6	9.50	6.2	.....	8.5	4
Williams, W.	105	105	95	.....	68	37	11.00	7.8	.....	11.8	3
								252.0	11.7		
Norfolk:											
Charlotteville	174	174	202	.....	25	75	.....	14.4	.....	17.2	9
Houghton	99	100	119	.....	3	.....	.....	.....	.....	19.2	10
Middleton	111	120	166	.....	25	.....	.....	17.8	.....	20.7	6
Townsend	230	186	190	.....	.....	100	.....	24.5	.....	14.9	13
Walsingham N.	95	115	98	.....	40	25	.....	.....	.....	18.7	11
Walsingham, S.	78	103	118	.....	.....	.....	.....	3.5	.....	20.8	....
Windham	300	300	204	.....	.....	.....	.....	29.5	.....	10.8	10
Woodhouse	150	135	105	20	60	30	.....	12.9½	.....	13.6	5
								102.6			
Northumberland:											
Alnwick	100	100	61	.....	50	30	.....	.....	.....	8.8	2
Brighton	150	149	222	.....	22½	125½	.....	11.6	.....	15.5	5
Cramahe	150	210	181	.....	50	170	.....	12.9	.....	14.	6
Haldimand	263	263	276	.....	100	100	.....	17.7	.....	13.2	14
Hamilton	183	200	235	.....	50	100	.....	18.4	(8.4)	19.1	14
Monaghan, S.	45	49	43	.....	35	14	.....	.....	discon.	19.5	4
Murray	240	200	206	.....	20	100	.....	21.75	.....	10.4	5
Percy	150	150	157	2	50	50	.....	7.2	.....	18.4	6
Seymour	198	200	168	20	90	15	.....	10.5	.....	14.1	11
								100.05			
Ontario:											
Brock	181	181	211	.....	151	30	.....	24.5	.....	18.7	10
Mara	140	140	164	46	45	20	.....	55.8	.....	19.8	6
Pickering	275	329	329	7	100	50	.....	33.4	.....	17.	17
Rama	110	110	65	.....	7	10	.....	16.	.....	9.7	9
Reach	130	170	207	.....	60	40	.....	21.2	.....	24.2	11
Scott	120	130	109	.....	75	45	.....	3.8	.....	15.6	3
Scugog	28	29	33	.....	18	11	.....	.....	.....	16.5	1
Thorah	102	102	108	.....	40	20	.....	22.4	.....	11.8	2
Uxbridge	170	160	156	.....	80	50	.....	12.4	.....	14.2	5
Whitby, E.	121	121	148	.....	60	40	.....	15.	.....	22.	8
Whitby	130	116	155	.....	47	74	.....	29.	.....	13.4	5
								233.5			
Oxford:											
Blandford	87	72½	78	15	35	22½	14.1	14.3	.....	16.8	3
Blenheim	175	179¼	165	.....	179¼	.....	36.3	29.5	.....	23.8	9
Dereham	156	154	171	23	65	10	34.3	26.8	.....	22.4	10
Nissouri, E.	135	140	139	18	70	30	26.5	12.2	.....	18.2	8

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Oxford—Continued											
Norwich, N.	99	74	97	9	.....	20	21.00	12.3	.....	20.6	6
Norwich, S.	100	100	104	3	5	.....	14.5	21.5	.....	19.3	5
Oxford, E.	97	97	105	8	20	.....	17.62	15.3	.....	20.	6
Oxford, N.	63	63	71	.....	6	.....	9.00	18.8	.....	18.3	2
Oxford, W.	75	100	93	14	50	50	13.6	15.4	.....	25.7	4
Zorra	155	163	163	21	.....	.....	35.50	18.	.....	24.4	7
Zorra, W.	165	162	163	27¼	133	1¾	30.45	17.4	.....	15.1	8
								201.5			
Peel:											
Albion	168	165	175	3	6	25	15.62	27.6	.....	13.2	13
Caledon	200	203	193	3	50	100	21.25	37.6	.....	18.2	12
Chinguacousy	240	235	241	17	10	200	33.12	29.4	.....	14.6	15
Toronto	260	185	203	23	10	125	31.25	28.1	2.75	18.7	17
Toronto Gore	68	63	60	4	3	40	8.12	1.5	.....	12.3	6
								124.2	2.75		
Perth:											
Blanshard	133	117	117	20	160	10	20.00	15.2	.....	17.	8
Downie	124	124	112	17	107	.....	19.25	15.	.....	19.7	4
Easthope, N	115	95	114	.....	80	10	8.75	1.25	.....	17.5	7
Easthope, S	70	70	67	2	50	18	9.68	24.4	.....	26.8	2
Ellice	135	135	139	.....	85	50	18.26	8.5	.....	22.9	6
Elma	160	150	164	.....	75	75	18.93	15.	.....	21.4	8
Fullarton,	120	87	99	2	83	2	15.62	7.25	.....	16.5	6
Hibbert	89	89	100	.....	38	20	10.12	7.2	.....	22.9	5
Logan	138	121	132	5	80	31	19.97	.....	.....	19.4	5
Mornington	150	116	115	.....	90	16	22.50	9.	.....	19.2	10
Wallace	148	148	121	.....	125	23	17.49	11.5	.....	17.	4
								114.30			
Peterborough:											
Asphodel	111	.....	98	.....	20	35	.....	16.59	.....	14.7	4
Belmont and Methuen.	200	200	170	10	25	8	.....	9.87	.....	8.6	6
Burleigh Anstruther...	100	100	76	12	25	63	.....	.....	.....	5.8	4
Chandos	90	.....	80	.....	90	.....	.....	.....	.....	.....	5
Douro	221	121	97	.....	50	50	.....	7.90	.....	7.2	4
Dummer	156	.....	102	.....	.....	.....	.....	.79	.....	10.4	7
Ennismore	100	105	30	.....	60	25	.....	.....	.....	7.7	1
Galway and Cavendish	120	120	82	.....	.....	120	.....	.....	.....	8.1	6
Harvey	94	106	76	.....	10	.....	.....	.....	.....	9.8	3
Monaghan, N	40	61	43	.....	10	30	.....	15.80	.....	24.5	4
Otonabee	200	200	165	20	140	40	.....	23.70	.....	14.3	12
Smith	150	200	145	50	100	30	80.57	5.92	.....	17.3	7
								80.57			
Prescott:											
Alfred	100	100	100	.....	.....	.....	.....	14.1	.....	32.3	7
Caledonia	132	120	120	.....	.....	.....	.....	6.2	.....	11.4	9
Hawkesbury, E	115	115	115	3	10	80	.....	18.	.....	36.1	7
Hawkesbury, W.	75	75	75	4	25	25	.....	9.6	.....	17.9	5
Longueuil	30	31¼	33½	4	4	1	.....	6.6	.....	33.8	3
Plantagenet, N	100	100	100	.....	.....	20	.....	19.7	.....	36.2	11
Plantagenet, S.	150	.....	127½	.....	.....	.....	.....	.....	.....	20.9	9
								74.2			

Township	Total Return (1907 Returns)	Total Revised Returns, 1913	Total (Office Map Measurement)	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Prince Edward:											
Ameliasburg	100	100	90	10	90	.....	26.4	5.9	.....	24.9	7
Athol	69	65	59	4	.....	.....	12.00	.....	.....	15.3	5
Hallowell	129	.....	115	.....	.....	.....	29.00	9.87	.....	18.2	5
Hillier	130	97	80	5	87	6	20.5	7.9	.....	10.2	5
Marysburg, N	69	69	62	8	3	20	13.00	.....	.....	14.1	12
Marysburg, S	69	69	61	3	40	7	16.00	.....	.....	15.4	....
Sophiasburg	129	93¼	107	14	55½	23¾	28.60	.....	.....	12.7	9
								23.67			
Renfrew:											
Admaston	80	132¾	116	.....	.....	30	.....	26.46	.....	24.2	11
Algona, S	60	55	44	.....	.....	5	.....	10.66	.....	12.9	6
Alice and Fraser	120	240	110	.....	5	100	.....	7.9	.....	17.0	6
Bagot and Blythfield	150	150	82	.....	.....	100	.....	13.22	.....	8.4	6
Bromley	100	100	105	.....	4	90	.....	5.13	.....	19.7	7
Brougham	54	50	32	.....	.....	40	.....	.....	.....	9.8	2
Brudenell and Lyndoch	80	90	86	.....	.....	20	.....	.....	.....	15.3	6
Grattan	160	85	84	2	.....	5	.....	20.73	.....	11.7	8
Griffith & Matawatchan	120	51	51	.....	.....	10	.....	.....	.....	4.7	5
Hagarty and Richards	180	145	49	.....	.....	.....	.....	9.8	.....	15.9	6
Head, Clara and Maria	50	39	.....	20	15	.....	.....	.....	.....	5.9	....
Horton	111	111	67	.....	20	70	.....	17.77	.....	12.6	4
McNab	150	150	101	2	10	75	.....	23.70	.....	22.7	11
Pembroke	24	35	21	½	8	5	.....	10.2	.....	35.3	2
Petawawa and McKay	50	58	88	.....	5	5	.....	11.16	.....	16.9	1
Radcliffe	60	60	49	.....	.....	.....	.....	.....	.....	19.4	2
Raglan	.....	56	52	.....	.....	56	.....	.....	.....	.....	8
Rolph, Buchanan, Wylie	100	85	52	.....	.....	40	.....	5.9	.....	10.8	5
Ross	150	90	96	.....	25	50	.....	9.87	.....	12.3	5
Sebastopol	55	55	46	.....	.....	20	.....	.....	.....	11.3	6
Sherwood, Jones & Burns	.....	.....	46	.....	.....	.....	.....	.....	.....	.....	5
Stafford	60	60	52	.....	10	10	.....	4.74	.....	16.1	3
Westmeath	200	142	142	.....	31	50	.....	10.27	.....	15.4	5
Wilberforce	180	95	111	.....	.....	.....	.....	5.9	.....	11.9	6
								193.41			
Russell:											
Cambridge	100	.....	69½	3	10	130	14.8	.....	.....	32.3	8
Clarence	100	225	225	.....	16	100	31.7	.....	.....	52.9	13
Cumberland	150	150	150	3	.....	50	29.2	.....	.....	23.4	9
Russell	150	.....	64	20	2	20	14.2	.....	.....	20.9	9
							89.9	.....			
Simcoe:											
Adjala	138	134	134	.....	17	25	20.00	.....	.....	14.7	11
Essa	207	207	190	.....	75	100	32.5	19.	.....	15.4	9
Flos	200	200	186	5	25	125	29.00	10.00	.....	15.2	12
Gwillimbury, W	110	120	131	5	15	75	13.2	7.75	.....	19.6	6
Innisfil	176	196	197	.....	110	50	26.00	26.	.....	18.	14
Matchedash	51	40	114	36	18	18	3.2	14.	.....	8.8	3
Medonte	185	205	201	.....	50	75	30.5	24.5	.....	22.1	13
Nottawasaga	225	225	247	5	150	50	44.00	33.	.....	20.7	15
Orillia	202	207	256	10	112	55	32.75	38.9	.....	18.7	11
Oro	200	200	215	.....	70	130	38.25	14.	.....	18.1	11
Sunnidale	165	160	159	.....	40	100	25.26	9.	.....	13.5	7
Tay	110	110	158	½	20	65½	26.05	28.3	.....	49.8	9
Tecumseth	210	210	200	60	75	70	37.00	32.75	.....	14.8	10

Township	Total Return (1907 Returns)	Total Revised Returns 1913	Total (Office Map Measurement)	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Simcoe.—Continued.											
Tiny	234	233	233	2	60	78	19.2	11.5	.....	16.6	9
Tossorontio	132	80	124	.....	20	30	12.5	13.6	.....	11.7	4
Vespra	186	186	196	.....	40	60	24.5	26.8	.....	13.5	5
								304.10			
Stormont:											
Cornwall	145	160	126	35	40	20	.....	21.	.....	37.9	12
Finch	130	130	108	.....	75	10	.....	15.25	.....	22.3	8
Osnabruck	185	187	129	1½	100	50	.....	10.75	.....	25.	11
Roxborough	200	200	117	.....	150	50	.....	14.75	.....	21.4	8
								61.75			
Victoria:											
Bexley	60	60	59	.....	35	25	.....	8.00	.....	12.9	4
Carden	90	90	92	2	43	22	.....	.....	.....	6.8	4
Dalton	50	50	68	.....	25	15	.....	.....	.....	9.1	4
Eldon	200	154	171	40	50	40	.....	33.57	.....	10.8	8
Emily	160	180	169	.....	100	80	.....	13.82	.....	11.9	4
Fenelon	150	150	163	3	20	10	.....	15.00	.....	13.8	11
Laxton	60	75	45	5	15	45	.....	.....	.....	11.	2
Mariposa	225	225	215	12	200	13	.....	21.33	.....	15.4	8
Ops	180	170	142	20	80	45	.....	53.32	.....	11.	4
Somerville	150	86	89	.....	25	50	.....	15.80	.....	11.7	5
Verulam	200	175	146	35	45	55	.....	11.45	.....	9.1	3
								172.29			
Waterloo:											
Dumfries, N	120	120	149	2	40	40	48.00	24.55	6.4	15.8	4
Waterloo	300	250	202	.....	175	75	60.75	33.9	16.3	21.9	15
Wellesley	198	159	159	.....	3	100	37.87	13.7	.....	22.2	8
Wilmot	200	175	175	.....	91	75	27.00	9.25	.....	23.	9
Woolwich	150	150	142	.....	150	.....	36.7	16.2	.....	27.1	7
								97.60	22.7		
Welland:											
Bertie	189	189	191	25	12	.....	23.5	43.75	.....	15.9	11
Crowland	57	140	120	2	.....	175	13.00	20.	1.	18.1	2
Humberstone	90	140	142	15	5	90	17.00	27.8	.....	31.6	8
Pelham	151	151	151	4	5	50	21.7	10.	.....	16.4	9
Stamford	100	90	106	12	.....	35	20.00	14.	18.75	25.2	7
Thorold	66	66	129	6	.....	60	19.2	11.	14.	24.3	5
Wainfleet	153	153	241	.....	.....	.....	27.5	33.75	.....	16.	7
Willoughby	100	103	103	13	.....	20	11.00	6.75	.....	8.7	2
								187.05	33.75		
Wellington:											
Arthur	147	147	157	½	85	62	12.2	18.1	.....	17.8	10
Eramosa	130	150	125	1	140	9	6.08	6.55	.....	18.8	7
Erin	200	200	201	½	100	.....	11.52	10.	.....	15.3	7
Garafraxa, W	141	141	19	3	20	60	7.3	6.9	.....	14.4	6
Guelph	110	110	119	13	50	47	4.8	30.	.....	20.6	6
Luther, W	100	100	108	2	40	30	9.7	6.9	.....	18.2	9
Maryborough	168	207	148	¾	180	27	12.00	7.6	.....	15.7	7
Minto	192	194	174	.....	120	.....	9.6	39.	.....	14.1	9
Nichol	90	90	89	.....	30	60	11.8	12.5	.....	17.3	5

Township	Total Return (1907 Returns)	Total Revised Returns 1913	Total Office Map Measurement)	Improved Stone Roads	Improved Gravel Roads	Well Graded Earth Roads	Under County Road System	Railways (Steam)	Railways (Electric)	Rural Population per mile of Road (1907)	Number of Post Offices
Wellington.—Continued.											
Peel	165	165	195	.....	22	100	10.4	8.5	.....	19.8	11
Pilkington	90	69	92	.....	1	50	3.88	10.	.....	12.9	2
Puslinch	200	200	168	4½	100	50	8.4	17.25	.....	13.2	5
								173.30			
Wentworth:											
Ancaster	125	125	134	6	.....	100	24.95	17.20	11.40	28.5	9
Barton	39	108⅝	82	18⅛	.....	90⅝	15.45	34.45	4.7	12.1	6
Beverly	190	180	185	35	50	40	26.5	12.16	.....	19.8	10
Binbrook	70	70	77	8	.....	40	8.7	.....	.....	17.1	4
Flamboro, E	56	85	117	22	30	23	16.5	3.95	.....	37.6	5
Flamboro, W	90	83	79	20	.....	50	28.00	2.76	.....	27.9	9
Glanford	69	92	78	7	.....	92	7.2	6.3	.....	21.7	4
Saltfleet	84	84	124	20	16	30	11.2	41.47	.....	38.	9
								118.24			
York:											
Etobicoke	84	76	110	8	9	60	16.88	12.	4.6	56.7	10
Georgina	80	80	93	.....	50	20	.....	10.5	.....	19.4	8
Gwillimbury, E	130	130	158	3	100	20	.....	14.15	8.75	24.7	8
Gwillimbury, N	90	87	87	.....	69	18	.....	5.75	11.6	17.	7
King	211	220	216	.....	75	110	.....	17.65	3.25	22.1	18
Markham	201	201	175	10	50	100	21.55	24.6	4.1	24.7	19
Scarborough	126	126	202	9	20	160	19.33	38.5	7.5	28.7	14
Vaughan	201	175	185	4	71	75	19.2	17.3	4.1	19.6	17
Whitchurch	158	158	146	10	70	30	2.15	36.	5.5	17.6	14
York	155	164	150	25	35	100	24.38	70.2	6.25	100.6	26
								246.65	55.65		

APPENDIX No. 5

Traffic Census Tables

The following tables contain what may be called a minimum traffic census for various representative roads throughout the Province. The count was taken practically between the dates of October 15th and November 15th, 1913, and as this is just the period between the close of the motoring season and the opening of market hauling on the part of the farmers, it will be seen that at its least the traffic will always be as heavy as the figures here given indicate. As one traffic officer put it, "The farmers are all busy ploughing and traffic is lighter now than at almost any time of the year." These figures therefore may be taken as indicating a point below which the volume of traffic on the roads shown, will not fall. This volume of traffic at the minimum will continue on the roads for every week in the year.

In all twenty (20) stations were established by the Commission and the counts taken for the full week of seven days from the hours of 7 a.m. to 7 p.m. In a number of cases it was found practicable to have the men stationed at the intersection of a main road and a local or side road and in these instances a count was made of the traffic on each of the two roads. The traffic returns on these local roads are also presented here.

STATIONS.

Station No. 1.—Barrie-Orillia Road.
" 2.—Lincoln County Stone Road.
" 3.—Guelph-Fergus Road.
" 4.—Yonge Street.
" 5.—Dundas Street.
" 6.—Kingston Road.
" 7.—Port Hope Gravel Road.
" 8.—Innisville Road.
" 9.—Metcalfe Road (South of Ottawa).
" 10.—River Road (St. Lawrence).
" 11.—Athens Road.
" 12.—Kingston Road (East of Brockville).
" 13.—Kingston Road (East of Belleville).
" 14.—Madoc Road.
" 15.—Hamilton-Brantford Road.
" 16.—Sydenham Road (near Dundalk).
" 17.—Owen Sound Road (near Durham).
" 18.—Huron Road (between Stratford and Sebringville).
" 19.—Longwoods Road (near Glencoe).
" 20.—Talbot Street (between Aylmer and St. Thomas).

INTERURBAN MARKET ROADS

Class of Traffic	Weather—Day								
	Monday—Cloudy Light snow	Tuesday—Cold	Wednesday-Cold	Thursday—Cloudy to fine and warm	Friday—Fine	Saturday—Fine and mild	Sunday—Fine and mild	Total	Daily Average
One horse light vehicle	42	19	45	27	43	147	45	368	52.5
One horse heavy vehicle	1	.....	9	8	3	4	.....	25	3.5
Two horse light vehicle	9	2	1	4	.....	2	6	24	3.4
Two horse heavy vehicle	22	23	33	27	18	78	.....	201	28.7
Runabout	.....	.....	.....	1	1	.....	.....	2	.2
Touring Car	1	.....	1	1	1	4	8	16	2.2
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	75	44	89	68	66	235	59	.....	.....

Station: No. 1.
Road: Barrie-Orillia (Penetang) Road.
Location: Four miles north of Barrie on Penetang Road.
Condition of Road: Surface rough in places, but solid.

Class of Traffic	Weather—Day								
	Monday—Cloudy	Tuesday—Rain	Wednesday-Cloudy	Thursday—Rain	Friday—Cold and clearing	Saturday—Cold and fine	Sunday—Rain	Total	Daily Average
One horse light vehicle	76	61	86	70	79	91	110	573	81.8
One horse heavy vehicle	36	39	45	47	40	55	10	272	38.8
Two horse light vehicle	13	5	12	12	10	10	18	80	11.4
Two horse heavy vehicle	64	64	69	78	79	74	.....	428	61.1
Runabout	14	4	9	10	2	11	23	73	10.4
Touring Car	54	11	53	52	37	58	57	322	46.0
Motor Trucks	.....	.....	.....	.....	.....	.....	1	1	.1
Total	257	184	274	269	247	299	219	.....	.....

Station: No. 2.
Road: Lincoln County Stone Road.
Location: Three-quarters of a mile west of Beamsville.
Condition of Road: Sound, with surface muddy.

Class of Traffic	Weather—Day								
	Monday—Cloudy and cold	Tuesday—Cloudy and fair	Wednesday-Fine	Thursday—Fine	Friday—Fine	Saturday—Fair, cold and windy	Sunday—Fair	Total	Daily Average
One horse light vehicle	34	23	13	53	25	47	62	257	36.5
One horse heavy vehicle	12	8	20	14	11	14	1	80	11.4
Two horse light vehicle	9	1	.....	6	2	9	1	28	4.0
Two horse heavy vehicle	50	68	49	57	59	57	1	341	48.7
Runabout	3	6	14	7	12	18	52	112	16.0
Touring Car	39	43	62	103	59	73	325	704	100.5
Motor Trucks	14	6	13	6	9	5	3	56	8.0
Total	161	155	171	246	177	223	445	.....	.....

Station: No. 4.
Road: Yonge Street.
Location: Seven miles north of Toronto.
Condition of Road: Good.

Class of Traffic	Weather—Day								
	Monday—Cloudy	Tuesday—Cloudy and cold	Wednesday—Cold and clear	Thursday—Clear and warm	Friday—Clear and warm	Saturday—Cold and bright	Sunday—Bright	Total	Daily Average
One horse light vehicle	48	13	23	33	18	23	91	249	35.5
One horse heavy vehicle	31	39	20	33	32	35	7	197	28.2
Two horse light vehicle	.....	.....	.....	2	.....	4	1	7	1.0
Two horse heavy vehicle	50	96	62	57	100	39	5	409	58.4
Runabout	10	.....	10	7	17	6	34	84	12.0
Touring Car	76	61	85	99	78	173	390	662	94.5
Motor Trucks	10	10	8	9	10	5	2	54	7.7
Total	225	219	208	240	255	285	530	.....	.....

Station: No. 5.
Road: Dundas Road.
Location: Six miles west of Toronto on Dundas Road.
Condition of Road: Excellent, hard, smooth, dry.

Class of Traffic	Weather—Day								
	Monday—Rain and sleet.	Tuesday—Cloudy.	Wednesday—Fair.	Thursday—Fine.	Friday—Cloudy and fine.	Saturday—Rain.	Sunday—Rain.	Total.	Daily Average.
One horse light vehicle	54	31	54	44	60	56	9	308	44.0
One horse heavy vehicle	19	15	16	13	17	8	.....	88	12.5
Two horse light vehicle	1	6	7	1	5	.....	.....	20	2.8
Two horse heavy vehicle	14	25	46	34	23	11	.....	153	21.8
Runabout	1	.....	2	5	4	.....	.....	12	1.7
Touring Car	6	1	9	21	15	10	1	63	9.0
Motor Trucks	.....	.....	1	2	1	.....	.....	4	.5
Total	95	78	135	120	125	85	10	.....	.....

Station: No. 6.
Road: Kingston Road.
Location: Two and one-quarter miles west of Whitby.
Condition of Road: Very muddy.

Class of Traffic	Weather—Day								
	Monday—Cloudy to showery.	Tuesday—Cloudy to rain.	Wednesday—Cloudy.	Thursday—Cloudy and cold.	Friday—Cloudy to fine.	Saturday—Fair.	Sunday—Fair.	Total.	Daily Average.
One horse light vehicle	68	95	70	41	66	113	102	555	79.2
One horse heavy vehicle	20	17	41	21	28	53	8	188	26.8
Two horse light vehicle	4	29	18	5	8	14	16	94	13.4
Two horse heavy vehicle	33	11	19	15	23	49	15	165	23.5
Runabout	10	1	7	3	5	8	35	69	9.8
Touring Car	6	16	14	3	12	9	16	86	12.2
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	141	169	169	88	142	246	192	.....	.....

Station: No. 12.
Road: Kingston Road.
Location: One mile and three-quarters east of Brockville.
Condition of Road: Muddy.

Class of Traffic	Weather—Day								
	Monday—Cloudy.	Tuesday—Cold with wind.	Wednesday—Fair to stormy.	Thursday—Fair.	Friday—Fair.	Saturday—Clear and bleak.	Sunday—Clear and fair.	Total.	Daily Average.
One horse light vehicle	76	70	73	63	69	100	92	543	77.5
One horse heavy vehicle	36	45	28	39	34	56	10	248	35.4
Two horse light vehicle	8	12	5	13	6	7	4	54	7.7
Two horse heavy vehicle	27	43	33	49	54	36	.....	242	34.5
Runabout	4	8	.....	2	4	6	5	29	4.1
Touring Car	4	5	2	1	2	9	21	44	6.2
Motor Trucks	.....	4	2	2	.....	.....	.....	.....	.....
Total	155	187	193	168	169	214	132	.....	.....

Station: No. 13.
Road: Kingston Road.
Location: Three miles east of Belleville.
Condition of Road: Very good, numerous mud holes.

Class of Traffic	Weather—Day								
	Monday—Showery.	Tuesday—Cold and wet.	Wednesday—Cloudy with rain.	Thursday—Cold with snow.	Friday—Cold with snow.	Saturday—Cold.	Sunday—Fine and warm	Total	Daily Average.
One horse light vehicle	91	55	60	79	82	207	166	740	105.7
One horse heavy vehicle	66	42	70	41	62	111	2	394	56.2
Two horse light vehicle	6	.....	.....	.....	1	2	3	12	1.7
Two horse heavy vehicle	65	57	105	120	115	185	2	649	92.7
Runabout	1	3	4	1	.....	4	17	30	4.2
Touring Car	12	5	4	12	6	18	128	185	26.4
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	241	162	243	253	266	527	318	.....	.....

Station: No. 15.
Road: Brantford-Hamilton Road.
Location: Five miles east of Brantford on the Brantford-Hamilton Road.
Condition of Road: Very muddy.

Class of Traffic	Weather—Day								
	Monday—Rain to fair and cold	Tuesday—Rain	Wednesday Rain	Thursday—Fair, cold, and windy	Friday—Snow all day	Saturday—Fair and cold	Sunday—Fine	Total	Daily Average
One horse light vehicle	153	86	111	98	137	226	81	892	127.4
One horse heavy vehicle	8	16	11	16	13	19	.....	83	11.8
Two horse light vehicle	4	23	3	2	16	28	.....	76	10.8
Two horse heavy vehicle	42	65	27	29	45	41	.....	249	35.5
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	12	3	8	1	1	.....	12	37	5.2
Motor trucks	.....	.....	4	.....	.....	.....	.....	.....	.....
Total	219	193	164	146	212	314	93	.....	.....

Station: No. 18.
Road: Huron Road (between Stratford and Sebringville).
Location: Three quarters of a mile east of Sebringville on the Huron Road.
Condition of Road: Very good—solid.

Class of Traffic	Weather—Day								
	Monday—Cloudy	Tuesday—Rain	Wednesday Cloudy	Thursday—Cloudy to rain	Friday—Fair to cloudy	Saturday—Fair	Sunday—Fair to cloudy	Total	Daily Average
One horse light vehicle	20	20	24	13	14	22	30	143	20.4
One horse heavy vehicle	.....	.....	.....	.....	.....	.....	.....	.....	.....
Two horse light vehicle	2	1	1	4	1	.....	.....	9	1.2
Two horse heavy vehicle	9	3	5	3	17	14	.....	51	7.2
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	3	.....	1	.....	2	2	5	13	1.8
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	34	24	31	20	34	38	35	.....	.....

Station: No. 19.
Road : Longwoods Road.
Location : One-and-a-half miles west of Strathburn on the Longwoods Road.
Condition of Road : Very muddy.

Class of Traffic	Weather—Day								
	Monday—Cool and Cloudy	Tuesday—Cloudy with rain	Wednesday Cloudy with rain	Thursday—Cold and rain	Friday—Cloudy and cold	Saturday—Clear and Cool	Sunday—Fair and warm	Total	Daily Average
One horse light vehicle	40	45	48	54	54	52	68	361	51.5
One horse heavy vehicle	8	8	11	13	9	17	2	68	9.7
Two horse light vehicle	9	16	12	15	13	24	4	92	13.1
Two horse heavy vehicle	26	19	35	30	38	39	.....	187	26.7
Runabout	1	2	1	.....	.....	.....	.....	4	.5
Touring car	2	3	.....	.....	.....	6	20	31	.4
Motor trucks	1	.....	.....	.....	.....	1	.....	2	.2
Total	87	93	197	112	114	139	94	.....	.....

Station: No. 20.
Road : Talbot Street.
Location : One-and-a-quarter miles west of Aylmer on Talbot Street.
Condition of Road : Heavy.

RURAL MARKET ROADS

Class of Traffic	Weather—Day								
	Monday—Clear	Tuesday—Fine	Wednesday—Showers	Thursday—Showers	Friday—Showers	Saturday—Clear and cold	Sunday—Fine	Total	Daily Average
One horse light vehicle	31	16	20	14	10	34	53	178	27.4
One horse heavy vehicle	1	4	3	.....	1	5	.....	14	2.0
Two horse light vehicle	2	.....	4	.....	.....	3	.....	9	1.2
Two horse heavy vehicle	9	8	14	13	3	18	.....	65	9.4
Runabout	1	2	2	1	.....	.....	.....	6	.8
Touring Car	3	2	6	1	.....	.....	10	22	3.1
Motor Trucks	1	.....	.....	.....	.....	.....	.....	1	.1
Total	48	32	49	29	14	60	63	.....	.....

Station: No 3.
Road: Guelph-Fergus Road.
Location : One mile east of Fergus on the Guelph-Fergus Road.
Condition of Road: Very fair shape—some surface mud.

Class of Traffic	Weather—Day								
	Monday—Cold and cloudy	Tuesday—Cold and cloudy	Wednesday Cold and clear	Thursday—Cold and clear	Friday—Cold and clear	Saturday—Cold and cloudy.	Sunday—Cold and cloudy	Total	Daily Average
One horse light vehicle	31	25	25	16	22	74	30	223	31.8
One horse heavy vehicle	13	9	15	10	8	25	7	87	12.4
Two horse light vehicle	4	10	8	9	3	20	.....	54	7.7
Two horse heavy vehicle	10	12	15	21	22	25	.....	105	15.0
Runabout	3	6	3	5	4	6	15	42	6.0
Touring Car	10	6	2	16	17	6	40	97	13.8
Motor Trucks	2	1	2	1	1	.....	10	17	2.4
Total	73	69	70	78	77	156	112	.....	.....

Station: No 7.
Road: Port Hope Gravel Road.
Location: Four miles west of Peterboro' on the Gravel Road.
Condition of Road: Hard and dry in spite of rain.

Class of Traffic	Weather—Day								
	Monday—Clear	Tuesday—Cloudy	Wednesday Fine	Thursday—Fine	Friday—Clear and cold	Saturday—Fine	Sunday—Fine	Total	Daily Average
One horse light vehicle	25	26	25	20	16	63	53	228	32.5
One horse heavy vehicle	5	.....	5	2	5	2	1	20	2.8
Two horse light vehicle	16	2	4	.....	1	2	.....	25	3.5
Two horse heavy vehicle	19	4	6	2	8	5	.....	44	6.2
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring Car	.....	.....	5	2	2	.....	7	16	2.2
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	65	32	45	26	32	72	61	.....	.....

Station: No. 8.
Road: Innisville Road.
Location: Three miles north of Perth on Innisville Road.
Condition of Road: Hard and good, holding some water.

Class of Traffic	Weather—Day								
	Monday—Rainy	Tuesday—Cold	Wednesday Fine	Thursday—Fine	Friday—Fine.	Saturday—Rain	Sunday—Rain	Total	Daily Average
One horse light vehicle	45	25	34	48	37	48	30	267	38.1
One horse heavy vehicle	19	22	14	43	19	68	4	189	27.0
Two horse light vehicle	2	1	1	.....	.....	3	2	9	1.2
Two horse heavy vehicle	40	64	36	53	36	53	2	284	40.5
Runabout	.....	.....	2	.....	.....	1	3	6	.8
Touring Car	9	5	15	12	20	15	11	87	12.4
Motor Trucks	6	6	7	6	6	.....	4	35	5.0
Total	121	123	109	162	118	188	56	.....	.....

Station: No. 9.
Road: Metcalfe Road.
Location: Three miles south of Ottawa.
Condition of Road: Muddy.

Class of Traffic	Weather—Day								
	Monday—Windy with snow.	Tuesday—Cloudy and cold.	Wednesday-Bright and cold.	Thursday—Clear and cool.	Friday—Clear and warm.	Saturday—Cloudy and cool.	Sunday—Rain.	Total.	Daily Average.
One horse light vehicle	28	49	60	64	79	103	64	447	63.8
One horse heavy vehicle	23	14	21	15	21	16	2	112	16.0
Two horse light vehicle	7	9	6	9	9	9	3	52	7.4
Two horse heavy vehicle	12	5	11	12	4	8	1	63	9.0
Runabout	.....	.....	.....	.....	.....	11	.....	.....	1.5
Touring Car	5	.....	4	11	15	.....	9	44	6.2
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	75	77	102	111	128	147	79	.....	.....

Station: No. 10.
Road: River Road (St. Lawrence).
Location: One mile west of Cornwall on the River Road.
Condition of Road: Very heavy.

Class of Traffic	Weather—Day								
	Monday—	Tuesday—	Wednesday-	Thursday—	Friday—	Saturday—	Sunday—	Total.	Daily Average
One horse light vehicle	124	133	115	124	120	267	121	1004	143.4
One horse heavy vehicle	30	46	23	36	52	82	5	274	39.1
Two horse light vehicle	22	26	30	18	64	40	1	201	28.7
Two horse heavy vehicle	32	45	58	15	30	81	1	262	37.4
Runabout	.....	.....	1	.....	.....	.....	15	16	2.2
Touring Car	9	4	1	12	4	10	.....	30	4.2
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	217	254	228	205	270	480	143	.....	.....

Station: No. 11.
Road: Athens Road.
Location: One and a half miles north of Brockville on the Athens Road.
Condition of Road: Much of it good, very wet in places.

Class of Traffic	Weather—Day								
	Monday—Rain and cloudy.	Tuesday—Rain.	Wednesday—Cloudy.	Thursday—Fair and cloudy.	Friday—Fair.	Saturday—Fair to cloudy.	Sunday—Fair.	Total.	Daily Average.
One horse light vehicle	37	61	52	78	53	132	68	481	68.5
One horse heavy vehicle	18	2	14	17	8	50	8	117	16.7
Two horse light vehicle	8	7	7	33	8	89	5	46	6.5
Two horse heavy vehicle	8	25	20	10	25	22	2	112	16.0
Runabout	.....	.....	3	4	1	1	6	15	2.1
Touring Car	27	11	16	17	23	16	39	149	21.2
Motor Trucks	.....	.....	2	.....	.....	.....	.....	2	.2
Total	98	106	114	159	117	310	128	.....	.....

Station: No. 14.
Road: Madoc Road.
Location: Four miles north of Belleville on the Madoc Road.
Condition of Road: Excellent road, hard and dry.

Class of Traffic	Weather—Day								
	Monday—Rain to fine.	Tuesday—Rain to fair.	Wednesday—Rain.	Thursday—Rain to snow & rain.	Friday—Fair to rain.	Saturday—Clear and cold.	Sunday—Clear.	Total.	Daily Average.
One horse light vehicle	12	16	17	14	11	28	20	118	16.8
One horse heavy vehicle	2	5	.....	1	.....	2	.....	10	1.4
Two horse light vehicle	2	2	.....	2	4	.....	2	12	1.7
Two horse heavy vehicle	11	24	11	10	16	24	.....	96	13.7
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring Car	4	2	1	1	1	2	.....	11	1.5
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	30	49	29	28	32	56	22	.....	.....

Station: No. 16.
Road: Sydenham Road.
Location: Two miles north of Dundalk on the Toronto-Sydenham Road.
Condition of Road: Rather rough on surface, but hard.

Class of Traffic	Weather—Day								
	Monday—Rainy to cold.	Tuesday—Rainy to fine.	Wednesday—Threatening to rain.	Thursday—Rain and snow.	Friday—Showery.	Saturday—Cloudy to fine.	Sunday—Fine.	Total.	Daily Average.
One horse light vehicle	15	17	18	9	14	28	26	127	18.1
One horse heavy vehicle	.....	.....	.....	.....	.....	.....	.....	.....	.....
Two horse light vehicle	4	.....	4	.....	4	5	.....	17	2.4
Two horse heavy vehicle	2	11	3	.....	1	13	.....	30	4.2
Runabout	.....	.....	.....	.....	.....	.....	2	2	.2
Touring Car	.....	.....	.....	.....	.....	.....	2	3	.4
Motor Trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	22	28	25	9	19	46	30	.....	.....

Station: No 17.
Road: Owen Sound Road.
Location: Five miles west of Durham.
Condition of Road: Good in places, bad in places.

LOCAL TOWNSHIP ROADS.

Class of Traffic	Weather—Day								
	Monday—Clear	Tuesday—Fine	Wednesday—Showers	Thursday—Showers	Friday—Showers	Saturday—Clear and cold	Sunday—Fine	Total	Daily Average
One horse light vehicle	142	7	12	18	14	16	39	248	35.4
One horse heavy vehicle	.....	.....	.....	2	.....	.....	.....	2	.2
Two horse light vehicle	14	.....	4	.....	.....	.....	1	19	2.7
Two horse heavy vehicle	2	1	3	.....	1	4	.....	11	1.5
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	.....	.....	.....	.....	.....	.....	2	2	.2
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	158	8	19	20	15	20	42	.....	.....

Station: No. 3.
Road : Side Road.
Location : One mile east of Fergus off the Guelph-Fergus Road.

Class of Traffic	Weather—Day								
	Monday—Rain and sleet	Tuesday—Cloudy	Wednesday—Fair	Thursday—Fine	Friday—Cloudy to Fine	Saturday—Rain	Sunday—Rain	Total	Daily Average
One horse light vehicle	13	6	12	9	31	14	6	96	13.7
One horse heavy vehicle	8	4	6	6	2	2	.....	28	4.0
Two horse light vehicle	.....	.....	1	.....	.....	.....	.....	1	.1
Two horse heavy vehicle	2	2	1	5	.....	3	.....	15	1.8
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	.....	.....	.....	.....	.....	.....	.....	.....	.....
Motor trucks	.....	.....	.....	.....	1	.....	.....	.....	.1
Total	23	12	25	20	34	19	6	.....	.....

Station: No. 6.
Road : Side Road.
Location : Two and one-quarter miles west of Whitby.

Class of Traffic	Weather—Day								
	Monday—Cold and cloudy	Tuesday—Cold and cloudy	Wednesday—Cold and clear	Thursday—Cold and clear	Friday—Cold and clear	Saturday—Cold and cloudy	Sunday—Cold and cloudy	Total	Daily Average
One horse light vehicle	2	4	2	1	6	5	4	24	3.4
One horse heavy vehicle	.....	.....	.....	.....	.....	1	.....	.....	.1
Two horse light vehicle	.....	1	.....	1	.....	5	.....	7	1.0
Two horse heavy vehicle	.....	.....	4	2	4	.....	.....	10	1.4
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	.....	.....	.....	.....	.....	.....	.....	.....	.....
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	2	5	6	4	10	11	4	.....	.....

Station: No. 7.
Road : Side Road.
Location : 4 miles west of Peterboro, off the Port Hope Gravel Road.

Class of Traffic	Weather—Day								
	Monday—Clear	Tuesday—Cloudy	Wednesday—Fine	Thursday—Fine	Friday—Clear and cold	Saturday—Fine	Sunday—Fine	Total	Daily Average
One horse light vehicle	4	8	12	11	4	26	22	87	12.4
One horse heavy vehicle	.....	8	6	10	.....	1	.....	25	3.7
Two horse light vehicle	5	7	4	4	4	5	.....	29	4.1
Two horse heavy vehicle	7	2	1	1	1	3	.....	15	2.1
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	2	.....	.....	2	.....	1	.....	5	.7
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	18	25	23	28	9	36	22	.....	.....

Station: No. 8.
Road: (Local) 3rd Line.
Location: Three miles north of Perth off the Innisville Road.
Condition of Road: Very good in spite of rains.

Class of Traffic	Weather—Day								
	Monday—Cold and rain	Tuesday—Cold	Wednesday Cold and cloudy	Thursday—Cold and cloudy	Friday—Cold, snow	Saturday—Cold and bright	Sunday—Fine and warm	Total	Daily Average
One horse light vehicle	18	24	36	25	15	29	13	160	22.8
One horse heavy vehicle	14	17	17	22	21	25	5	121	17.4
Two horse light vehicle	4	14	4	17	10	16	.....	65	9.2
Two horse heavy vehicle	15	17	5	29	9	16	.....	91	13.0
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	.....	.....	.....	.....	.....	.....	.....	.....	.....
Motor truck	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	51	72	62	93	55	86	18	.....	.....

Station: No. 11.
Road: Side Road.
Location: One and a half miles north of Brockville off the Athens Road.

Class of Traffic	Weather—Day								
	Monday—Cloudy to showery	Tuesday—Cloudy to rain	Wednesday Cloudy	Thursday—Cloudy to cold	Friday—Cloudy to fine	Saturday—Fair	Sunday	Total	Daily Average
One horse light vehicle	24	25	36	89	30	51	47	302	43.1
One horse heavy vehicle	5	34	14	40	13	36	3	145	2.7
Two horse light vehicle	2	5	4	8	5	7	9	40	5.7
Two horse heavy vehicle	19	15	12	32	15	27	.....	120	17.1
Runabout	2	.....	.....	3	3	3	6	17	2.4
Touring car	.....	4	3	7	6	3	7	30	4.2
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	53	83	69	179	72	127	72	.....	.....

Station: No. 12.
Road: Side Road (Lyn Road).
Location: One and three quarters miles east of Brockville.

Class of Traffic	Weather—Day								
	Monday—Cloudy	Tuesday—Rain	Wednesday Cloudy	Thursday—Fair	Friday—Fair to cloudy	Saturday—Fair to cloudy	Sunday—Fair	Total	Daily Average
One horse light vehicle	7	10	13	15	9	5	23	82	11.7
One horse heavy vehicle	4	1	2	1	5	5	1	19	2.7
Two horse light vehicle	1	1	.....	5	2	6	2	17	2.4
Two horse heavy vehicle	6	8	6	5	5	2	.....	32	4.5
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	5	1	3	4	4	3	7	27	3.8
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	23	21	24	30	25	21	33	.....	.....

Station : No. 14.
Road: Side Road.
Location: Four miles north of Belleville off the Madoc Road.

Class of Traffic	Weather—Day								
	Monday—Showery	Tuesday—Cold and rain	Wednesday Cloudy, rain	Thursday—Cold and snow	Friday—Cold and snow	Saturday—Clear and cold	Sunday—Fine and warm	Total	Daily Average
One horse light vehicle	18	8	5	7	6	12	17	73	10.4
One horse heavy vehicle	17	4	4	4	4	8	.....	41	5.8
Two horse light vehicle	2	.....	.....	.....	1	.....	.....	3	.4
Two horse heavy vehicle	9	12	11	6	8	15	.....	61	8.5
Runabout	1	.....	.....	2	.....	.....	.....	3	.4
Touring car	.....	.....	.....	.....	2	2	2	6	.8
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	47	24	20	19	21	37	19	.....	.....

Station: No. 15.
Road: Side Road.
Location: Five miles east of Brantford off the Brantford-Hamilton Road.

Class of Traffic	Weather—Day								
	Monday—Rain to fair	Tuesday—Rain to fair	Wednesday Rain	Thursday—Rain to snow	Friday—Fine to Rain	Saturday—Clear and cold	Sunday—Clear	Total	Daily Average
One horse light vehicle	4	15	11	7	3	11	17	68	9.7
One horse heavy vehicle	.....	1	.....	.....	.....	2	.....	3	.4
Two horse light vehicle	.....	3	.....	.....	1	.....	2	6	.8
Two horse heavy vehicle	9	13	9	6	14	21	.....	72	10.2
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	.....	2	1	.....	.....	2	2	7	1.0
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	13	34	21	13	18	36	21	.....	.....

Station : No. 16.
Road : Side Road.
Location : Two miles north of Dundalk off the Toronto-Sydenham Road.

Class of Traffic	Weather—Day								
	Monday—Rain to cold	Tuesday—Rain to fine	Wednesday Threatening to rain	Thursday—Rain and snow	Friday—Showery	Saturday—Cloudy to fine	Sunday—Fine	Total	Daily Average
One horse light vehicle	2	4	1	1	1	3	22	34	4.8
One horse heavy vehicle	.....	.....	.....	.....	.....	.....	.....	.....	.....
Two horse light vehicle	.....	.....	.....	.....	.....	1	4	5	.7
Two horse heavy vehicle	1	3	1	.....	3	.....	.....	8	1.1
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	.....	.....	.....	.....	.....	.....	.....	.....	.....
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	3	7	2	1	4	4	26	.....	.....

Station : No. 17.
Road : Side Road.
Location : Five miles west of Durham.

Class of Traffic	Weather—Day								
	Monday—Rain to fair	Tuesday—Rain	Wednesday Rain	Thursday—Fair, very cold	Friday—Snow	Saturday—Fair and cold	Sunday—Fine	Total	Daily Average
One horse light vehicle	38	26	25	25	28	57	.....	199	28.4
One horse heavy vehicle	4	7	2	5	2	10	20	50	7.1
Two horse light vehicle	.....	1	.....	1	.....	6	.....	8	7.1
Two horse heavy vehicle	17	18	7	13	18	13	.....	86	7.2
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	5	1	2	1	.....	.....	5	14	2.0
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	64	53	36	45	48	86	25	.....	.....

Station : No. 18.
Road : Side Road.
Location: Three-quarters of a mile east of Sebringville off the Huron Road.

Class of Traffic	Weather—Day								
	Monday—Cloudy	Tuesday—Rain	Wednesday Cloudy	Thursday—Rain	Friday—Fair	Saturday—Fair	Sunday—Fair to cloudy	Total	Daily Average
One horse light vehicle	20	20	24	13	14	22	30	143	20.4
One horse heavy vehicle	.....	.....	.....	.....	.....	.....	.....	.....	.....
Two horse light vehicle	2	1	1	4	1	.....	.....	9	1.2
Two horse heavy vehicle	9	3	5	3	17	14	.....	51	7.2
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring Car	3	.....	1	.....	2	3	5	13	1.8
Motor trucks	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	34	24	31	20	34	38	35	.....	.....

Station : No. 19.
Road : Side Road.
Location : One-and-a-half miles west of Strathburn off the Longwoods Road.

Class of Traffic	Weather—Day								
	Monday—Cool and cloudy	Tuesday—Cloudy with rain	Wednesday Cloudy with rain	Thursday—Cold and rainy	Friday—Cloudy and cold	Saturday—Clear and cool	Sunday—Fair and warm	Total	Daily Average
One horse light vehicle	10	4	9	7	8	7	7	52	7.4
One horse heavy vehicle	.....	4	4	7	6	2	.....	23	3.2
Two horse light vehicle	.....	1	4	.....	2	3	.....	10	1.4
Two horse heavy vehicle	15	4	7	6	6	10	.....	48	6.8
Runabout	.....	.....	.....	.....	.....	.....	.....	.....	.....
Touring car	.....	.....	.....	.....	.....	.....	.....	.....	.....
Motor trucks	.....	.....	.....	.....	1	.....	.....	1	.1
Total	25	13	24	20	23	22	7	.....	.....

Station : No. 20.
Road : Side Road.
Location : One-and-a-quarter miles west of Aylmer off Talbot Street.

APPENDIX No. 6

Analysis of Automobile Registration in the Province of Ontario for Year Ended December 31st, 1913.

(A).—Belonging to Residents of the Province.

I. Automobiles:

(1)—Seating.	No. of Cars.	Accommodating Persons.
2	2,664	5,328
3	218	654
4	1,460	5,840
5	10,750	53,750
6	405	2,430
7	937	6,559
8	5	40
10	4	40
14	2	28
16	4	64
22	4	88
32	5	160
Totals....	16,458	74,981

(2)—Make:

Canadian	11,217
American	4,947
British	139
French and Belgian	95
Unspecified	60
Total	16,458

(3)—Horsepower.	No. of Cars.	Total H.P.
2½	15	38
3	18	54
3½	12	42
4	17	68
6	17	102
8	12	96
10	199	1,990
12	68	816
14	25	350
Carried forward	383	3,556

Horsepower.	No. of Cars.	Total H.P.
Brought forward	383	3,556
15	124	1,860
16	70	1,120
18	272	4,896
20	6,344	126,880
22	425	9,350
24	78	1,872
25	913	22,825
26	277	7,202
28	139	3,892
30	3,719	111,570
31	11	341
32	341	10,912
33	65	2,145
34	30	1,020
35	573	20,055
36	281	10,116
38	206	7,828
40	1,012	40,480
42	16	672
45	226	10,170
48	218	10,464
50	339	16,950
54	59	3,186
56	2	112
58	4	232
60	77	4,620
Over (av. 72)	14	1,008
Unspecified (av. 27)	240	6,480
Totals.....	16,458	441,814

II. *Commercial*:

(1) Delivery Wagons	237
(2) Motor Trucks	677

(3) Tonnage of Trucks:

Tons.	No. of Trucks.	No. of Tons.
1 or less	106	106
1½	10	15
2	220	440
3	44	132
4	12	48
5	22	110
6	16	96
8	1	8
Unspecified (av. 2.2)	246	541
Totals.....	677	1,496
Total of (1) and (2).....	914	

(4) *Make*:

Canadian	415
American	441
British.....	39
French and Belgium	5
Unspecified	14
Total	914

(5) *Horsepower of Trucks and Delivery Wagons:*

Horsepower.	No. of Cars.	Total H.P.
5	8	40
8	4	32
9	1	9
10	10	100
12	11	132
14	3	42
15	4	60
16	19	304
18	50	900
20	216	4,320
21	13	273
22	36	792
24	63	1,512
25	15	371
26	7	182
28	8	224
30	242	7,260
32	16	512
33	1	33
35	31	1,085
36	14	504
40	61	2,440
45	10	450
48	2	96
50	32	1,600
60	2	120
Unspecified (av. 28)	35	980
Totals	914	24,477

III. Motive Power of all Motor Vehicles Owned in Ontario:

Gasoline	17,110
Steam	39
Electric	223
Total	17,372

IV. Classification of Owners:

(1) *Occupation*:

Farmers	966
Professional and unspecified (rural)	771
Professional and unspecified (urban)	5,335
Business men	7,326
Business firms	1,504
Doctors (rural)	239
Doctors (urban)	900
Liverymen and taxicab firms	331
Total	17,372

(2) *Residence*:

Rural and villages	3,161
Towns	3,493
Toronto	6,196
Ottawa	798
Hamilton	887
London	494
Other cities	1,343
Total	17,372

(B).—Belonging to Non-Residents of the Province.

I. Automobiles:

(1)—Seating.	No. of Cars.	Accommodating Persons.
2	751	1,502
3	73	219
4	524	2,096
5	3,001	15,005
6	146	876
7	910	6,370
8	2	16
Unspecified (av. 4.8)	22	106
Totals	5,429	26,190

(2) Horsepower.	No of Cars.	Total H.P.
3	40	120
5	14	70
7	7	49
10	41	410
15	26	390
18	52	936
20	837	16,740
22	201	4,422
25	353	8,825
26	47	1,222
27	45	1,215
28	104	2,912
30	1,104	33,120
31	8	248
32	296	9,742
33	58	1,914
35	326	11,410
37	239	8,843
40	693	27,720
45	175	7,875
48	335	16,080
50	156	7,800
54	65	3,510
60	145	8,700
Over (av. 72)	39	2,808
Unspecified (av. 27)	23	621
Totals.	5,429	26,190

II. Commercial:

Horsepower.	No. of Cars.	Total H.P.
22	5	110
25	4	100
28	5	140
30	23	690
35	5	175
40	9	360
45	4	180
50	19	950
Totals.	74	2,705

III. Licenses Issued:

Months.	No. of Cars.
January	21
February	18
March	77
April	290
May	761
June	1,077
July	1,623
August	1,077
September	381
October	171
November	7
Total	5,503

IV. Residences of Owners:

(1) *Canada.*

Provinces		
Quebec	22	
New Brunswick	2	
Nova Scotia	1	
Manitoba	7	
Saskatchewan	1	
Alberta	6	
British Columbia	1	
Total		40

(2) *United States.*

Cities or States.	No. of Cars.	
New York City	101	
Chicago	108	
Rochester	101	
Niagara Falls	423	
Buffalo	1,163	
Detroit	1,887	
Ohio	125	
Pennsylvania	20	
Minnesota	17	
Others	1,518	
Total		5,463
Total number of vehicles owned by Non-residents		5,503

Motorcycles.

Approximate number (including tourists)	2,900

Chauffeur Licenses.

Approximate number	3,514

STATEMENT OF MOTOR PERMITS AND LICENSES ISSUED IN THE PROVINCE OF ONTARIO.

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
Automobiles	203	535	553	1,176	1,530	1,754	2,452	4,230	11,339	16,266	22,875
Permits issued to motors owned in Ontario	.....	.....	.....	517	550	589	1,020	1,977	7,338	11,939	17,372
To others	.....	.....	.....	659	980	1,165	1,432	2,253	4,001	4,327	5,503
Motorcycles— Permits issued	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,754	2,900
To motorcycles owned in Ontario	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,648	2,650
To others	.....	.....	.....	.....	.....	.....	.....	.....	.....	106	250
Chaffeur Licenses issued	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,965	3,514
Revenue	.....	.....	.....	$5,523.15	$8,098.50	$10,007.50	$12,418.00	$24,394.01	$50,831.22	$73,255.96	$103,588.06

TAX SCHEDULES

Automobile tax schedules as applied to (1) locally owned automobiles, and (2) commercial trucks in Ontario would yield revenues as follows:—

A.	New York schedule	$101,340 00
B.	Massachusetts	163,976 00
C.	New Hampshire	658,115 00
D.	Commission's proposal	261,992 00
E.	Great Britain	658,115 00
F.	Italy	884,129 00

To the revenue under the Commission's proposal should be added other items, as follows:—

(3)	Motor cycles, at $4.00	$87,000 00
(4)	Chauffeur licenses, at $4.00	14,056 00
(5) Foreign tourists (6) Foreign trucks	at $10.00	54,630 00
	Total	$155,686 00
	Locally owned automobiles and trucks	261,992 00
	Grand total motor revenue	$417,678 00

A. NEW YORK STATE.

1. *Automobile Schedule:*

Horse Power (Brake).	Registration Fee.
Up to 25	$5 00
26 to 35	10 00
36 to 50	15 00
51 and up	25 00

2. *Commercial Trucks:*
   Same as automobile schedule.
3. *Motor Cycles* $5 00
4. *Chauffeurs:*
5. *Foreign Tourists:*
6. *Foreign Trucks:*

Revenue: Above schedule would yield, if applied to Ontario (including items 1 and 2 only), $101,340.00.

B. MASSACHUSETTS.

1. *Automobile Schedule:*

Horse Power (Brake).	Registration Fee.
Up to 20	$5 00
20 to 30	10 00
30 to 40	15 00
40 to 50	20 00
50 and up	25 00

2. *Commercial Trucks:*
   Same as automobile schedule.
3. *Motor Cycles:*
4. *Chauffeurs:*
5. *Foreign Tourists:*
6. *Foreign Trucks:*

Revenue: Above schedule would yield, if applied to Ontario (including items 1 and 2 only), $163,976.00.

C. NEW HAMPSHIRE.

1. *Automobile Schedule:*

Horse Power (Brake).	Registration Fee.
Up to 15	$10 00
16 to 30	15 00
31 to 40	20 00
41 to 50	25 00
51 to 60	30 00
61 and up	40 00

2. *Commercial Trucks* $10 00
3. *Motor Cycles* 3 00
4. *Chauffeurs* 5 00
5. *Foreign Tourists:*
6. *Foreign Trucks:*

Revenue: Above schedule would yield, if applied to Ontario (including items 1 and 2 only), $658,115.00.

D. COMMISSION'S PROPOSAL.

1. *Automobile Schedule:*

Horse Power (Brake).	Registration Fee.
Up to 20	$10 00 per car.
21 to 30	0 50 per h.p.
31 to 40	0 60 per h.p.
41 to 45	0 75 per h.p.
46 and up	1 00 per h.p.

2. *Commercial Trucks:*

2 tons and less	$10 00 per car.
Over 2 tons	5 00 per ton.

3. *Motor Cycles*	$4 00
4. *Chauffeurs*	4 00
5. *Foreign Tourists* (uniformly)	10 00
6. *Foreign Trucks* (uniformly)	10 00

Items 5 and 6 to be subject to reciprocal arrangements.

Revenue: Above schedule applied to Ontario would yield (including items 1 and 2 only), $261,992.00.

E. GREAT BRITAIN.

1. *Automobile Schedule:*

Horse Power (Brake).	Registration Fee.
Up to 8	$10 50
8 to 14	15 75
14 to 19	21 00
19 to 30	37 50
30 to 40	42 00
40 to 48	52 50
48 to 72	105 00
72 and up	210 00

2. *Commercial Trucks:*
Same as automobile schedule.
3. *Motor Cycles:*
4. *Chauffeurs* $0 15
5. *Foreign Tourists:*
6. *Foreign Trucks:*
7. *Driving License* $1 50

Revenue: Above schedule would yield, if applied to Ontario (including items 1 and 2 only), $658,115.00.

F. ITALY.

1. *Automobile Schedule:*

Horse Power (Brake).	Registration Fee.
Up to 11	$18 00
11 to 14	36 00
14 to 29	44 00
29 to 72 (plus $1.00 for each h.p. over 29)	44 00
72 and up	100 00

2. *Commercial Trucks:*
Same as automobile schedule.
3. *Motor Cycles:*
4. *Chauffeurs:*
5. *Foreign Tourists:*
6. *Foreign Trucks:*

Revenue: Above schedule would yield, if applied to Ontario (including items 1 and 2 only), $844,129.00.

APPENDIX No. 7

Supporting Areas of Ontario Cities

Cities are benefited by the general rural development of the Province as brought about by better roads, a matter which has been more fully treated elsewhere in this report. Urban centres with good roads are especially benefited by the main roads in their immediate vicinity. It may in a general way be assumed, that each city has a special interest in an area immediately surrounding it, sufficient to provide a food supply for the city, and the population within such area.

It is not advanced by the Commission, that the "Suburban Area" referred to in the classification of roads should necessarily coincide with the area of food supply or "Supporting Area." Such an area is probably too great to meet conditions of actual practice; but it is of use as representing an extreme standard of measurement.

Before further explanation is entered upon, attention should be called to one or two preliminary points. It is well known that cities are not, even in the matter of home-grown products, supported altogether by their immediate neighbourhoods. Thus for example, while potatoes are an excellent crop in Ontario, New Brunswick potatoes are quoted throughout the year on local markets. The reason for this, of course, is that in point of time and cost, the New Brunswick potato-grower is actually nearer the Ontario markets than are the Ontario growers themselves. Under present conditions farmers within comparatively short distances of large consuming centres, are unable to take up diversified farming to the extent that they would, if they could market their produce readily as it ripened. Thus farmers in close proximity to centres of population may be found devoted to grain crops only, because the farmer cannot afford to risk the growing of crops requiring immediate marketing, or because he finds that the time consumed on the road to market and back makes the cost of production on these classes of foods relatively higher than it is on other crops which keep longer and can be marketed when his time is worth less. Thus, while it is true that our cities do not, at present, draw all their food from immediate territory, it would seem that the most potent influence, in preventing such an arrangement, has been the heretofore inadequate means of local transportation in marketing.

Improvement in these facilities would, however, induce the abandoning, by nearby farmers, of low priced crops, which have heretofore carried the bonus of cheap marketing, for high priced crops upon which marketing charges will decrease as the farmer is brought closer to his market.

Then again, it should be pointed out that some districts are specially adapted to the production of certain products, such as fruits, and they should therefore, be properly expected to specialize in the production of these commodities. This factor has its effect in altering any general calculations that may be made for cities and their supporting area as a whole. Taking the case of any one supporting area, however, while a certain proportion of farmers would be producers of some special commodity for distant consumers (*e.g.* apples for the North-west) on the other hand, a certain proportion would be relieved from producing for the local centres by the fact of imports from distant producers (*e.g.* grain from the North-west) and, while it is not held that these two proportions would balance each other, yet they would tend to make any discrepancy in the general calculation less noticeable.

Still another point arises with the calculation of a large supporting area, such as that for the City of Toronto. A number of towns of various sizes are found within the area. In this instance, therefore, a special calculation has been made and the results tabulated with the other figures on the accompanying chart. In the case of the smaller cities, however, this difficulty is not incurred.

In all, calculations have been made for the twenty-one largest centres in Ontario. The results appear in the following table:—

Name of City.	Population.	Total supporting area. (Sq. miles.)	Radius of circle or part of circle of total supporting area. (Miles.)	Radius of area of immediate support. (Miles.)
Toronto, city only (Census 1911)..	376,538	1676.8	.....	32.7
City, 1913 (Assessment figures).	445,575	2591.9	.....	35.3
With country (census)	458,432	2225.4	37.6	.....
With country, 1913 (Assessm't).	533,411	2591.9	40.6	.....
With country and towns, 1913 (Assessment).....	573,728	2905.9	43.0	.....
Ottawa	87,062	621.25	19.8	16.8
Hamilton	81,969	730.84	15.9	11.8
London.....	46,300	326.18	10.1	8.3
Brantford	21,132	161.82	7.2	5.5
Kingston.....	18,874	126.77	8.9	7.8
Peterboro.....	18,360	148.49	6.9	5.6
Windsor.....	17,829	119.98	9.6	7.7
Berlin.....	15,196	104.28	5.8	4.8
Guelph.....	15,175	97.95	5.6	4.8
St. Thomas.....	14,054	79.98	5.1	4.4
Stratford	12,946	75.71	4.9	4.3
Owen Sound	12,558	99.67	5.9	5.1
St. Catharines.....	12,484	101.76	8.0	6.4
Chatham.....	10,770	60.35	4.4	3.8
Galt.....	10,299	68.04	4.6	4.0
Sarnia.....	9,947	80.21	7.8	6.7
Belleville.....	9,876	63.88	6.3	5.4
Brockville	9,374	73.21	6.8	5.8
Woodstock.....	9,320	53.69	4.2	3.7
Niagara Falls.....	9,248	69.56	6.6	5.1

The results given in the above table are based upon calculations in which both the general items of food entering into the dietary of the average family, and the yield of these items in the various districts respectively, for which estimates are presented, have been taken into account. The "average family" was taken consisting of five members. There was then worked out the acreage required to supply the various food items appearing. The total area required for the support

of fifty people for one year was thus found to be 109.14 acres. It is to be noted that this acreage provides only the amounts of each kind of food grown locally and consumed by the unit of fifty people in one year and no account is taken whatever of other foods, such as imported fruits, etc., which are consumed in addition. The 109.14 acres thus represents the area required to provide home-grown products only. It is to be further noted that this acreage represents only the net area required, and this whole area of land would need to be cultivated to provide the required amount of food. In the case of each area for which a calculation was made, therefore, account was taken of the proportion between cultivated or producing land and total acreage.

It will be noted that when the circles designating the supporting areas are placed upon a map, certain of these, if carried through, would intersect; the conclusion being that the supporting areas of various cities are found to overlap each other. It therefore becomes necessary to make allowances in these cases. The Toronto and Hamilton areas are one instance. In the original calculation for Toronto, however, its areas were taken as being semi-circles, and it is seen on the map that if a straight line were drawn through Toronto, running approximately parallel with the Lake Shore, it would cut the "Toronto" circles before they reach the "Hamilton" circles. The difficulty is thus obviated: it is assumed that the additional area shown as falling south of the aforesaid line and west of the city, would be balanced by those parts of the area shown as lying over Lake Ontario to the east of Toronto and within the circle making the boundary of the Guelph area.

In the case of overlapping areas, the smaller city is favoured in that the amount of overlapping, when taken from the larger area, makes but a slight difference in its total, whereas the same amount taken from the smaller area would make a very appreciable difference. Furthermore, the areas where overlapping takes place lie, with one exception, closer to the smaller than to the larger urban centre. In the case of the intersecting of the "St. Catharines" and "Niagara Falls" circles attention is drawn to the fact that the original calculation for "St. Catharines" was made on the basis of a semi-circle, while as a matter of fact, the "St. Catharines" circles have been extended to the Lake Shore, thus allowing a deduction from this area sufficient to permit the completion of the "Niagara Falls" circle.

APPENDIX No. 8

Postal Routes

In view of the use of the roads of the Province for postal purposes, the following three tables are of considerable interest. It may be pointed out that the recent introduction of the parcel post delivery system will further tax the roads of the country. The effectiveness of that service—thereby lessening the cost of collection and delivery as well as greatly enlarging the area of supply—will largely depend upon the character of the roads to be used.

TABLE 1.

GROSS MILEAGE, BY PROVINCES, OF RURAL DELIVERY ROUTES IN CANADA.

Prince Edward Island	1,900
Nova Scotia	900¾
New Brunswick	2,146
Quebec	2,908¼
Ontario	23,594
Manitoba	699½
Saskatchewan	684½
Alberta	742
British Columbia	681
Grand total	34,256

TABLE 2.

POSTAL REVENUE FOR YEAR ENDED 31ST MARCH, 1913.

Ontario	$5,916,512 05
Quebec	2,504,935 36
Nova Scotia	620,089 14
New Brunswick	440,338 46
Prince Edward Island	80,531 21
Manitoba	1,566,194 30
Saskatchewan	1,047,353 86
Alberta	965,449 37
British Columbia	1,225,884 98
Yukon	15,140 85
	$14,382,429 58

TABLE 3.

POSTAL ROUTE STATISTICS (For 32 Counties)

County	Mileage of Postal Service			Expenditure of Postmaster General's Department year ended March 31st, 1913			
	Outside municipalities* (including distances of one mile or over in rural parts)	Within municipalities* (including distances less than one mile in rural parts)	Total Mileage.	Outside municipalities.	Within municipalities.	Total expenditure.	Average expenditure outside municipalities per mile.
				$	$	$	$
Brant	102	3	105	9,204 98	1,773 77	10,978 75	90 24
Bruce	882	9	891	12,505 75	3,815 24	16,320 99	14 20
Carleton	524	2	526	14,203 97	16,445 89	30,649 83	27 11
Dundas	305	4	309	3,797 47	996 20	4,793 67	12 45
Durham	450	3	453	6,969 03	1,421 38	8,390 41	15 49
Dufferin	291	4	294	7,972 43	784 15	8,756 57	27 39
Essex	308	30	427	6,515 71	4,790 64	11,306 35	16 41
Elgin	667	7	674	13,686 68	2,217 67	15,904 35	20 51
Frontenac	337	1	338	4,993 95	2,134 18	7,128 13	14 85
Grenville	340	2	342	7,577 51	955 50	8,533 01	22 82
Glengarry	229	5	234	4,366 37	1,463 40	5,829 77	19 07
Grey	983	11	994	20,402 04	3,856 80	24,258 84	20 76
Hastings	564	5	569	10,866 25	1,991 63	12,857 88	19 25
Halton	354	3	357	5,748 29	1,582 89	7,331 18	16 24
Haldimand	326	4	330	7,822 00	1,882 02	9,704 02	23 97
Haliburton	116	1	117	1,654 49	462 16	2,116 65	14 26
Huron	403	8	411	10,919 85	4,755 22	15,675 07	27 09
Kent	640	10	650	13,891 63	3,787 36	17,278 99	21 70
Lanark	587	6	593	9,195 84	2,536 01	11,731 85	15 69
Leeds	491	1	492	8,357 45	1,502 52	9,859 97	17 02
Lincoln	273	3	276	6,294 64	1,347 73	7,642 37	23 05
Lambton	835	5	838	15,362 68	2,743 50	18,103 68	18 39
Middlesex	1,268	9	1,277	20,527 47	2,461 62	22,989 09	16 05
Norfolk	70	6	76	6,034 56	1,554 14	7,588 70	86 28
Northumberland	64	1	65	1,145 59	25 00	1,170 59	17 90
Ontario	494	11	505	9,877 67	2,276 05	12,153 72	19 96
Oxford	1,037	34	1,051	16,954 08	4,048 62	21,002 70	16 34
Peel	215	4	219	5,369 75	1,812 17	7,181 92	24 97
Perth	572	5	577	13,004 73	2,700 14	15,704 87	22 73
Peterborough	516	3	519	9,247 06	1,829 74	11,076 80	17 92

Prescott	195	2	197	5,202 28	772 75	5,975 03	26 67
Prince Edward	218	1	219	4,031 17	603 25	4,634 42	18 49
Renfrew	957	9	966	14,134 67	3,800 81	17,934 47	14 77
Russell	186	6	192	4,029 01	1,393 73	5,322 73	21 66
Simcoe	783	13	796	15,275 33	10,878 33	26,153 66	19 50
Stormont	219	5	224	4,153 76	1,782 33	5,836 09	18 52
Victoria	471	5	476	9,269 13	1,488 10	10,757 23	19 67
Waterloo	490	6	496	10,773 90	3,580 74	14,354 64	21 97
Welland	150	10	160	5,947 01	4,282 85	10,229 86	39 64
Wellington	656	8	664	16,611 36	2,997 10	19,608 37	25 32
Wentworth	349	2	351	10,081 67	8,377 25	18,458 92	28 85
York	369	17	386	108,267 67	6,289 92	114,557 59	293 40
Unlocated	69	1	10	217 80	14 03	231 83	24 20
Total	19,384	265	19,647	492,362 67	125,814 44	618,058 26	1,318 22
Averages for the 32 counties	461	6	468	411,717 73	2,995 24	14,710 15	30 81

*Urban.

APPENDIX No. 9

Compendium of Highway Organization in Canada and the United States

A. IN CANADA.

From information obtained through the courtesy of Highway officials in other Provinces of the Dominion, the following summary has been compiled.

I. QUEBEC.

Highways are divided into two classes—

(1) Provincial roads built entirely by the Government on its own initiative and under authorization of the Lieutenant-Governor-in-Council. The Road Department determines the location, nature and cost of the work, takes possession of such roads (whether or not subject to municipal authority), may expropriate rights of way and fix the share per mile or part of a mile to be paid by the municipalities interested. The latter may by resolution propose a certain contribution based either upon a general tax collection roll prepared for the purpose and submitted to the Department, or by means of a special assessment on ratepayers bound to maintain roads.

(2) Municipal roads built by the municipalities according to the two following systems:—

(*a*) (According to the Act of 1911). The Government grants the local municipalities half of the amount expended on macadamizing and gravelling, the maximum grant being in the first instance $1,000, in the second $500. The Government also refunds one-third of the amount expended for replacing wooden bridges (less than eight feet span) by concrete culverts or concrete or corrugated steel pipes. When maintenance of earth roads is in charge of the municipal council, the municipality is entitled to an annual subsidy equal to one-half of the amount expended, the maximum grant being $400 if all the roads are under the control of the council, and $200 if the by-roads only are so controlled. Road plants are loaned to the municipalities—one-half of the cost of operation being paid by them; an instructor with a Government-paid salary is also furnished.

(*b*) (According to the Act of 1912). The Government is authorized to borrow $10,000,000 on debentures. Local municipalities are granted appropriations for this fund, limited in the case of most towns and village municipalities

to the amount required for the improvement of the main road only. County councils may also take advantage of this system, although up to the end of 1913, only one had done so. These municipalities are required to pay two per cent. interest on every appropriation for a period of forty-one years, the remainder of the interest and the sinking fund being provided by the Government. The initiative must be taken by the municipalities themselves, in the form of a by-law with the deposition of promissory coupons. Roads and bridges operated under this Act remain (or become by virtue of the Act) the property of the municipality, but all macadam work done in the Province under either Act is subject to the direction of the Department of Roads, which imposes upon the municipalities specifications with inspection and acceptation of the particular roads. A monthly report to the Minister is required from the municipalities, giving estimates of the work performed and unfinished and of financial details of work being done under the officer of the Road Department. Arrangements exist whereby municipalities not wishing to assume the interest indebtedness may raise contributions by special assessment, and in cases where the roads are under charge of the corporation, the amounts paid for interest on the Government grant are deducted from the amount due from the ratepayers responsible for the maintenance of such roads. Municipalities may not benefit by both Acts.

For the operation of the first Act (i.e., of 1911) the Legislature grants each year an appropriation out of the ordinary revenue ($250,000 in 1913). The interest and sinking fund for Government debentures under the second Act (i.e., the various municipalities. Under these inspectors are road-masters appointed by the municipalities go to the consolidated revenue of the Province.

II. NOVA SCOTIA.

The head of the Highway Department is the Road Commissioner appointed by the Lieutenant-Governor-in-Council: he is an official of the Department of Roads and Mines, and has under him an assistant commissioner who must be an engineer of experience. The latter has control of two travelling inspectors and instructors and the clerical staff. It is the duty of the inspectors to report to the commissioner as to the condition and requirements of roads and short bridges in the various municipalities. Under these inspectors are road-masters appointed by the former and acting as foremen.

Highways are divided into first, second and third classes on a traffic basis; at the present time bridge grants are limited to structures on roads of the first class, but may be extended to the other two if traffic conditions should warrant it.

Municipal road revenues are derived from the Government grant, and from commutation of Statute Labour. Co-operation between the municipal authorities and the road inspectors is encouraged. No bonds are issued and assessment is entirely under the control of Municipal Councils. There is also a "Motor Vehicle Act Road Improvement Fund," which is part of the Provincial Revenue.

III. NEW BRUNSWICK.

The Provincial Highway authority is the Provincial Road Engineer, who is an official of the Board of Public Works, and is appointed by the Lieutenant-Governor-in-Council to hold this office during pleasure. He has the supervision and general control over the building, maintenance and repair of the highways.

of the Province, and has under him County Inspectors of Highways wherever the latter are appointed to have control over the supervisors for each highway division in any County. There is no classification of roads.

A road tax is annually levied for the general repair and maintenance of highways in each county, every male person between the ages of 21 and 60 resident in the parish paying a poll tax of $1.50, and an amount not less than one-fifth per cent. upon the assessed value of real and personal property including income. This last income tax is extended to all persons, companies and estates. Municipalities may increase the rate of this road tax, which is paid to the County Treasurer, and is expended on the order of the Minister of Public Works in the division where it is collected.

In lieu of the road tax, resident ratepayers may perform Statute Labour before July 15th in each year; if notice is given before May 1st, Road Supervisors may call upon residents to give Statute Labour in lieu of taxes.

IV. BRITISH COLUMBIA.

The Department of Public Works has control over all roads and bridges in the Province—the executive head being the Public Works Engineer, who must prepare plans, maps and estimates for all public works, and act in a general advisory capacity. The Department is authorized to make road alterations and expropriate any private road after due notice, compensation being paid for such lands only as have buildings or form part of an orchard or garden.

A road tax of $2.00 per head is imposed on all males between the ages of twenty-one and sixty in the cities and district municipalities—military persons being exempted.

V. SASKATCHEWAN.

The Provincial highway governing body is the Board of Highway Commissioners, consisting of three members appointed by the Lieutenant-Governor-in-Council, one of whom shall be appointed as a chairman. They receive salaries and have duties assigned to them as may be determined upon from time to time by the Lieutenant-Governor-in-Council. There is associated with the Board for advisory purposes a committee of two members, one appointed annually by the Provincial organization representing rural municipalities and one by the Provincial organization representing urban municipalities. These members are allowed such per diem expenses and allowances as are fixed by the Lieutenant-Governor-in-Council for attendance at meetings where they are requested to be present by the Chairman of the Board of Commissioners. This Commission reports to the Minister of Public Works annually. Its duties are:—

(1) To lay out, plan and determine upon a system of public highways for the province which may from time to time be altered or modified as the Board may determine.

(2) To determine upon the most feasible and economic methods for constructing, improving and maintaining public highways.

(3) To furnish the officers of the municipalities with information respecting the construction, improvement and maintenance of public highways.

(4) To appoint such engineers, inspectors and officers as are necessary for the proper carrying out of the duties of the Board and the provisions of this Act. All such appointees shall receive such remuneration as shall be determined by the Lieutenant-Governor-in-Council.

The Board may with the consent of the Minister of Public Works spend such sums of money as are deemed advisable upon construction and improvement of Public Highways, and it may enter into agreements or make contracts for construction of or improvements on such highways. The Lieutenant-Governor-in-Council retains the right to make such general regulations regarding the expenditures of the Board as may be deemed expedient.

An attempt was first made to divide the expenditure in all municipalities equally among them, but this was abandoned on account of the varying needs of conditions met with in the various districts. The original division of funds in 1912 for road improvements and bridges was $1,300,000 for the former and $300,000 for the latter.

The attention of the Board was directed chiefly toward the main highways but it was found there were several roads, bridges, etc., which, though not on main roads, were beyond the power of the municipalities to construct and were taken over by the Board. The Board assists municipalities to the extent of 50 per cent. of the cost of improvements made when these improvements are according to the regulations adopted by order of the Lieutenant-Governor-in-Council.

Educational work has been attempted through the distribution of bulletins and specifications, by correspondence and through the staff of inspectors. A limited amount of experimental work has been attempted with only partial results.

The Board has instituted a Road Drag Competition with excellent results among the different municipalities. The Board has so far devoted its energies to the main roads, leaving the feeders to the municipalities, except insofar as concerned its advisory capacity. The Board finds that best results are obtained by its own road gangs who are building roads exclusively, and better work is done at a lower cost than rural gangs recruited from the farmers.

All bridges over 20 feet span are constructed and maintained by the Commission, which also operates and controls all ferries and drainage and water supply throughout the Province, with control covering all surveys for purposes of road diversion.

The Province derives its funds for permanent highway construction from Capital account (sale of Bonds); for maintenance work from Revenue account. The rural municipalities obtain their funds for highway purposes from the following sources:—

For permanent construction work debentures may be issued. This includes bridges and ferries, buying gravel pits or acquiring land. Maintenance work may be carried on out of the general revenue of the Municipality.

B. HIGHWAY IMPROVEMENT IN THE UNITED STATES.

For the purpose of affording information as to the progress of highway improvement in the United States, which might be helpful to the Province of Ontario in working out a plan for future highway improvement, information has been assembled and is herewith submitted concerning eight representative American States, namely, Massachusetts, New York, Pennsylvania, Ohio, Michigan, Minnesota, Wisconsin, and California.

In order to afford an intelligent idea as to the resources and needs of the respective states as well as their achievements in highway improvement, information is submitted as to area, population, wealth, taxation, general expenditures, etc. Information of this character is followed by a concise statement showing progress of state highway work, the lines along which development has proceeded, and wherever practicable, the cost of construction and maintenance is given. A digest of highway legislation and organization of other States in the American Union is appended.

1. MASSACHUSETTS.

General Information.

The State has a land area of 8,039 square miles, or about one-fifth that of Old Ontario. The land in farms comprises a little over half the gross area or 4,494 square miles. The population in 1910 was 3,366,416 or 418.8 per square mile of land area, of which 92.8 per cent. was urban and 7.2 per cent. or 241,049 was rural, thus giving an average rural population per square mile of farm land of 53.6. There were one hundred and eighty-five municipalities having a population of 2,500 inhabitants or more in 1910. It is thus evident that the road system in Massachusetts is practically interurban in character and must carry a traffic between cities rather than from farms to cities. Conditions also indicate a growing preponderance of motor traffic. This is further indicated by a traffic census conducted in each of the years 1909 and 1912 by the State Highway Commission, which showed that in the three year period the total of all vehicles increased 42 per cent. while light one-horse vehicles decreased 5 per cent., and motor vehicles increased 131 per cent. While motor vehicles comprised 42 per cent. of the traffic in 1909, the percentage had increased to 57 in 1912. This indicated that the roads of that State must be built more with a view to motor traffic than horse traffic. The assessed value of all property in the State in 1912 was $5,479,279,693, an average per square mile of land of about $681,587 and average per capita of $1,627. The total mileage of roads in the State outside of cities is about 17,272. The average assessed valuation of property in the State per mile of road is therefore $317,234. It is thus evident that the State is amply able to construct and maintain the costly types of road which its traffic conditions in general warrant. The mileage of roads is an average of 2.148 miles per square mile of land area, which closely approximates the average for England and France when the total mileage of those two countries is pro-rated over their land area.

Gravel Road, State of Massachusetts. This road, carrying much fast motor traffic, is maintained by oiling and the weekly use of the log drag.

Macadam Construction in Massachusetts.

Political Organization.

There are fourteen counties in the State for each of which the governing body is a county commissioner and two associate commissioners elected by the people. The county commissioners act rather as a court of appeal in road matters than as a direct administrative body, the latter function resting with the smaller units designated as towns and cities. In towns the governing body is a board of three selectmen chosen at the annual town meeting. In addition to the selectmen there is a highway surveyor or road commissioner who is elected in some of the towns and appointed by the selectmen in other towns.

Classification of Highways.

The public highways of the State are classified as "State Highways," "County Highways," and "City or Township Highways." The State highways are laid out by the State Highway Commission upon petition of the county, town or city authorities and thereafter are under the absolute control of the State Highway Commission, the State paying the entire cost of construction from money derived from State bond issues and receiving as a refund from the counties in which the respective roads are located 25 per cent. of such construction cost. The maintenance cost is paid by the State, partly from motor vehicle fees and partly from legislative appropriations, and the town contributes an amount not to exceed $50 per annum for each mile of such State highway. The county, town and city highways are constructed and maintained by those respective units, except that the State aids the small towns by expending 15 per cent. of State highway appropriations as follows:—

One-third in towns of less than one million dollar valuation, with no contribution from the town.

One-third in towns of less than one million dollar valuation, the town contributing an equal amount.

One-third in towns of over one million dollar valuation, the towns contributing an equal amount.

State Indebtedness for Highways and Other Purposes.

The total debt of the State on December 1st, 1912, was $43,112,583.33 or about .80 per cent. of the valuation. As a credit the State has a sinking fund of $22,322,573.52, so that the net direct debt on that date was $20,790,009.81 or about .38 per cent. of the valuation. The State had a contingent debt of $58,440,242.16 on December 1st, 1912, but this was a loan on the credit of the State to certain metropolitan districts and is assessed on the districts, no portion of the sum being a liability on the State at large. The average rate of interest on entire bonded debt was 3.21 per cent., and the average income on sinking funds was 3.66 per cent.

The State highway bonds outstanding December 1st, 1912, amounted to $6,965,000 against which should be credited $2,463,887.67 sinking fund, leaving the net debt of $4,501,112.33 or about .08 per cent. of the valuation, on which the annual interest amounts to about $236,000. Of this bond issue $1,160,000 were thirty year, three per cent. bonds: $176,000 three per cent. serial bonds: $3,365,000 thirty year, three and one-half per cent. bonds, and $2,264,000 three and one-half per cent. serial bonds. The total amount of state bonds issued for highway work

to December 1st, 1912, amounted to $7,342,000. To this should be added State highway bonds authorized but not issued, amounting to $1,545,000 making total issued and authorized to December 1st, 1912, $8,887,000. The legislature provided in 1912 for the issuance of State bonds during 1913, 1914, 1915, 1916 and 1917, to an amount not to exceed $5,000,000, not more than $1,000,000 of which should be expended in any one year, the bonds to be payable in not more than fifteen years, and to bear interest at not more than four per cent. This would indicate of bonds issued, authorized, or provided for by the legislature for highway purposes $13,887,000.

Revenues and Expenditures.

The total revenues of the State for 1912 were $15,842,000 and the actual running expenses of the State for that year were in round figures $15,760,000. The actual revenues of the State for 1912 amounted to $9,592,163.75 exclusive of the direct property tax, which varies from year to year according to the needs of the State and amounted in 1912 to $6,250,000. These revenues were made up as follows:—

Corporation tax (net)	$2,244,014 30
The National Bank Stock Tax (net)	385,619 71
Savings Bank Tax	1,869,055 50
Collateral Legacy Tax (old law)	113,307 09
Inheritance Tax (new law)	2,041,099 76
Insurance tax and licenses	703,228 69
Excise tax on foreign corporations	257,581 32
Excise tax on life insurance companies	472,440 78
Liquor licenses	827,535 22
Secretary's fees	229,225 42
Fees from courts of probate, etc.	24,492 73
Interest on bank balance	38,445 66
Income from institutions	53,317 98
Miscellaneous	332,798 59
	$9,592,163 75

To give an idea as to the purpose for which the State revenues were expended, a few of the principal items are given as follows:—

Legislative Department	$470,000 00
Judiciary	634,000 00
Military	728,000 00
Health	319,000 00
Harbours and Highways	601,000 00
Agriculture, Forestry, Fisheries and Game	557,000 00
Public Buildings	1,039,000 00
Charitable	4,588,000 00
Reformatory and Correctional	1,211,000 00
Educational	1,493,000 00
Interest	1,246,000 00

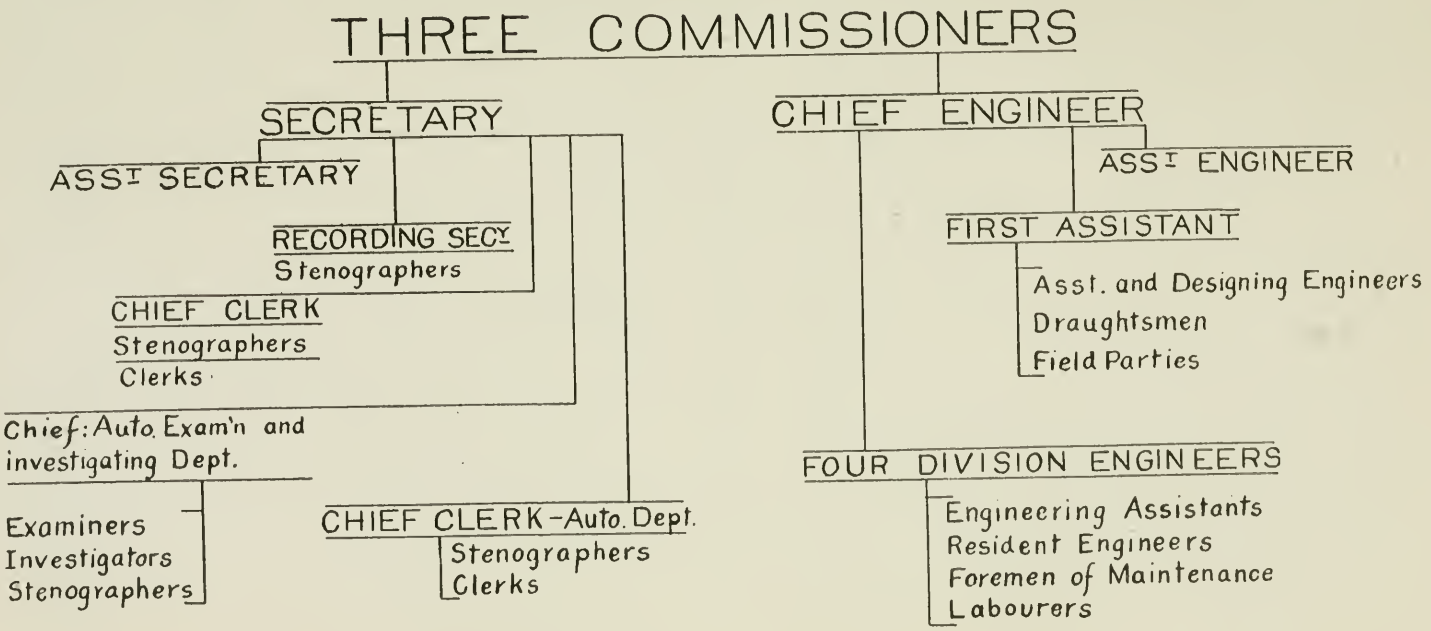
The average per capita expense of conducting the State Government is about $4.70, and of this amount 40 per cent., or about $1.85 per capita is paid in the form of direct property tax. This property tax would mean an average rate in 1912 on assessed value of about 1.1 mills. The total amount of taxes assessed for state, county and municipal purposes as on April 1, 1912, was $74,552,306, which, on a valuation of $5,479,279,693 would make a total tax rate of $.013. Of this amount $6,250,000 was for state tax; $4,353,312.83 for county levies, and $69,948,993.17 for city and town purposes.

Gravel Road, State of Massachusetts. This road, carrying 1,500 motor vehicles daily, is treated with a light bituminous oil, carrying 40 per cent. asphalt.

A Bituminous Surface Treatment, State of Massachusetts. Using an oil carrying 70 per cent. of asphalt.

Executive Organization of the

MASSACHUSETTS HIGHWAY COMMISSION



Highway Construction and Maintenance.

The funds available for the State Highway Department consist of $1,000,000 annually derived from State bond issues, an annual appropriation by the legislature from current revenues of $250,000 for maintnance of State highways, an annual estimated net revenue of about $500,000 from motor vehicle registration fees, or a total of about $1,750,000.

The total length of State highways completed to November 30, 1912, was 920 miles, and the total expenditures since the work began, including the planting of trees, amounted to $8,379,079.66 or an average outlay per mile of $9,107.69. The aid granted to small towns as explained under "Classification of Highways" amounted, Nov. 30, 1912, to $600,000, the towns contributing about $385,000. This expenditure has resulted in the improvement of about 300 miles of road at an average outlay of $3,283.33 per mile. The character of the construction of State highways is indicated by the fact that nearly 730 miles out of a total of 920 miles have been treated with some bituminous material. The experience of the Commission is that the application of the bituminous binder under pressure has been found to produce the most uniform results. As to maintenance, attention is called to the fact that until about five years ago there was only about $100 per mile available for the maintenance of State highways. The cost of maintenance is now stated to be over $500 per mile per annum. In fact it is generally admitted that the cost is now over $600 per mile.

Organization of State Highway Commission.

The State Highway Commission was established in 1893, and consists of three members appointed by the Governor for three year terms, one term expiring each year. The Chairman receives a salary of $5,000 per annum, and with the other two members of the Commission has supervision over State highways, the granting of aid to small towns, automobile registration, and the supervision of telephone and telegraph companies. There is a central office in Boston in which are located the secretary and the various assistants in the Highway Department, the automobile department being under the direction of a chief clerk; the engineering department under the direction of the chief engineer. The State is divided into five divisions, each in charge of a division engineer, one located at Boston, one at Middleboro, one at Pittsfield, one at Greenfield and one at Worcester.

Automobile Legislation.

The State levies a tax on motor vehicles according to horse-power as follows: less than 20 horse-power $5.00; 20 to 30 horse-power $10; 30 to 40 horse-power $15; 40 to 50 horse-power $20; 50 horse-power and above $25. Other provisions are made for commercial vehicles, etc. The amount derived from this fund is applied to maintenance. The total receipts for the year ending November 30, 1912, including fines, were $645,496.30, from which the expense of registration, etc., amounting to $103,261.53 should be deducted, leaving about $542,000 for maintenance.

II. NEW YORK.

General Information.

The state has a land area of 47,654 square miles. The land in farms comprises 34,439 square miles. The population in 1910 was 9,113,614 of which 78.8 per cent. was urban and 21.2 per cent or 1,928,120 was rural. The population per square mile of land areas was 191.2, and the rural population per square mile of farm land was 56. The assessed value of all property in the state in 1912 was $11,022,985,914, the ratio of assessed to actual value being 87.74 per cent. This would give an average of actual property value per square mile of land area of $264,406, and an average of actual property wealth per capita of $1,382. The total road mileage in the state is 79,279 and on this basis the average actual value of taxable property per mile of road would be about $159,000. The average mileage of roads per square mile of farm land in the state is 2.302, or slightly greater than the mileage for Massachusetts, and closely approximating the mileage of England and France.

The number of acres of farm land in 1910 was 22,030,367. There was an average increase in value per acre in the period from 1900 to 1910 of $7.79. This would make a total increase in the value of farm lands of nearly $172,000,000 or nearly one and three-quarter times the total amount of state bonds issued and authorized for road building. And, when it is considered that only 15 per cent. of the property taxes are paid by rural districts, the burden resting upon farm property by reason of road inmprovement is almost nominal when compared with the growing wealth of the farming sections.

Political Organization.

There are sixty-one counties in the state in each of which the governing body is a board of supervisors. The counties are in turn divided into 935 towns in which the governing body is a town board of supervisors. The board of supervisors of the various counties may appoint a county superintendent of roads for a term of four years and fix his salary, but if they fail to do so, the state highway commission may make such appointment or place the county in a district with other counties and appoint a district superintendent. The district or county superintendent has charge of the highways under the regulations of the state highway commission. In the towns there is elected biennially a town superintendent of highways, but the town may after petition of the taxpayers vote to have the town superintendent appointed by the town board instead of elected. The town superintendent has, under the regulations of the state highway commission, the care and supervision of the highways of the town.

Classification of Highways.

The highways are divided into state highways, constructed and improved at the sole expense of the state; county highways, consisting of market roads which are improved at the joint expense of the state, county and town; town highways, constructed and maintained by the town with the aid of the state, and county roads constructed and maintained by the county, but toward the cost of maintenance of which the state has during the past year contributed about 50 per cent.

The system of state highways is set forth in the highway law of the state which described the routes to be followed. Such state highways are to be improved from funds derived from the sale of state bonds. The law provides that not more than one-half the amount appropriated each year from the proceeds of the bonds shall be expended in the construction and improvement of state highways. The county highways are improved upon application of the board of supervisors of the county to the state highway commission, requesting that a certain designated highway be improved as a county highway. If the commission approves, it directs the division engineer to make surveys, prepare plans and specifications, which are then sent to the district or county superintendent, who personally examines the highway and makes his recommendation. The commission then transmits plans, specifications, and estimates to the board of county supervisors for final approval after which the work is carried forward by the commission. The law provides that state and county highways shall be improved by contract. When a county board of supervisors makes application for the improvement of county highways, it shall at the same time appropriate an amount sufficient to pay the share of the cost to be built by the county and town. After final payment under a contract for improvement of a county highway the state highway commission prepares a statement of cost and files a duplicate with the county treasurer, who pays upon the requisition of the commission an amount as follows: two per cent. of the costs of highways for each one thousand dollars of assessed value of real and personal property in said county for each mile of public highway in such county.

The maintenance of state and county highways is under the direct control and supervision of the commission. The immediate work is performed by the town or district or county superintendent under the direction of the state superintendent of highways. Annual appropriations are made by the legislature for the maintenance of state and county highways and each town is required to pay for the maintenance of state and county highways each year $50.00 for each mile of said highways within the town; incorporated villages 1½ cents for each square yard of surface maintained by the state within its corporate limits. Whenever any county has constructed or maintained a county road without expense to the state, the state shall annually contribute to the maintenance expenses of such road 50 per cent. of the amount appropriated by such county for the maintenance of the road during the preceding year.

The town superintendent prepares an annual statement showing the amount of money which should be raised by the town for the ensuing year for maintenance of its highways, such amount to be not less than an amount which, together with the aid to be given by the state, shall equal $30.00 for each mile of highway within the town. After approval of estimates by the town board a copy is sent to the state highway commission. The state aids the towns in proportion to the taxes levied therein. If the assessed value is less than $5,000 for each mile of highway in the town, outside of incorporated villages, the state pays an amount equal to the amount of the highway taxes levied therein. The state's proportion decreases from this point to the towns in which the valuation averages more than $25,000 for each mile of highway, in which cases the amount paid by the state shall not exceed one-tenth of one per cent. of such assessed valuation, and in no case shall the amount paid by the state exceed an average of $25.00 per mile for the total mileage of highways in the town outside of incorporated villages.

Patrolman's Wagon, carrying a flag. State of New York.

A New York State Broken-Stone Road.

State Indebtedness for Highways and Other Purposes.

The total debt of the state at the close of the fiscal year 1912 was $109,702,660, against which should be credited a sinking fund of $25,252,085.38 leaving the net state debt at $84,450,574.62, and making an average net state indebtedness of $9.26 per capita of the total population on the 1910 census basis, or an amount equal to .766 per cent. of the assessed valuation of property in the state.

The total state debt for road improvement at the close of the fiscal year 1912 was $34,000,000, against which should be credited a sinking fund of $4,285,715.76, leaving the net state debt for road improvement at $29,714,284.24, which would be an average state indebtedness for road improvement of $3.26 per capita on the basis of 1910 population figures. The ratio of state indebtedness for road improvement to total assessed valuation would be .270 per cent. The total amount of state bonds authorized for road improvement aggregates $100,000,000—$50,000,000 of which was authorized by the legislature of 1904, the bonds to run 50 years. One million dollars of bonds was issued December 1, 1906, bearing 3 per cent.; $5,000,000 issued March 1, 1908; $5,000,000 issued September 1, 1908; $5,000,000 issued March 1, 1910; $10,000,000 issued March 1, 1911, and $8,000,000 issued March 1, 1912, the last five issues bearing 4 per cent. interest: the bonds to be retired by a sinking fund to consist of 2 per cent. per annum for 50 years. The second issue of $50,000,000 was authorized by the legislature of 1912 and is to run for 50 years. Both of the bond issues were approved by the votes of the people. Further bond issues of the first $50,000,000 authorized will bear 4½ per cent. interest in order to obtain par as required by law.

Revenues and Expenditures.

The receipts to the general state fund for the year ending December 31, 1912, were $50,036,406 made up as follows:

Direct taxes	$6,326,823 13
Indirect taxes—	
Excise	9,412,363 84
Corporations	10,349,164 76
Organization of corporations	479,959 81
Inheritance tax	12,153,188 84
Stamp tax	3,653,037 24
Secured debt tax	1,411,567 60
Mortgages	1,852,324 45
Motor vehicles	1,053,762 25
Non-resident taxes	26,614 34
Sales of public lands	23,166 98
Fees, etc., public offices	499,344 66
Fines, fees, duties, etc.	380,355 22
Receipts from state institutions	860,806 77
Other receipts	1,560,926 19
Total	$50,036,406 08

Among the large items of expenditure by the state government were the following—(approximate amounts).

Educational purposes	$9,500,000 00
State hospitals, etc.	8,600,000 00
Legislative	1,900,000 00
Advancement of agriculture	2,630,000 00
Regulative	2,500,000 00
Penal	2,250,000 00
Protective	3,000,000 00
Constructive work	4,475,000 00
Judicial	1,830,000 00
Administrative	1,225,000 00
Contribution to interest and sinking fund	4,157,000 00

Of the taxable valuation the city property comprises 85 per cent. and other property 15 per cent. In addition to the direct state taxes, $237,733,486 was levied for town, county and special purposes, or a total of all direct taxes of $243,086,252. This total property tax pro-rated on the total assessed valuation shows the rate to be about 22 mills on the dollar. The average per capita expenses of conducting the state government is about $5.49, and of this amount about 12 per cent. or .66 per capita was paid in the form of direct property tax. Greater New York pays about 60 per cent. of all taxes within the state.

Highway Construction and Maintenance.

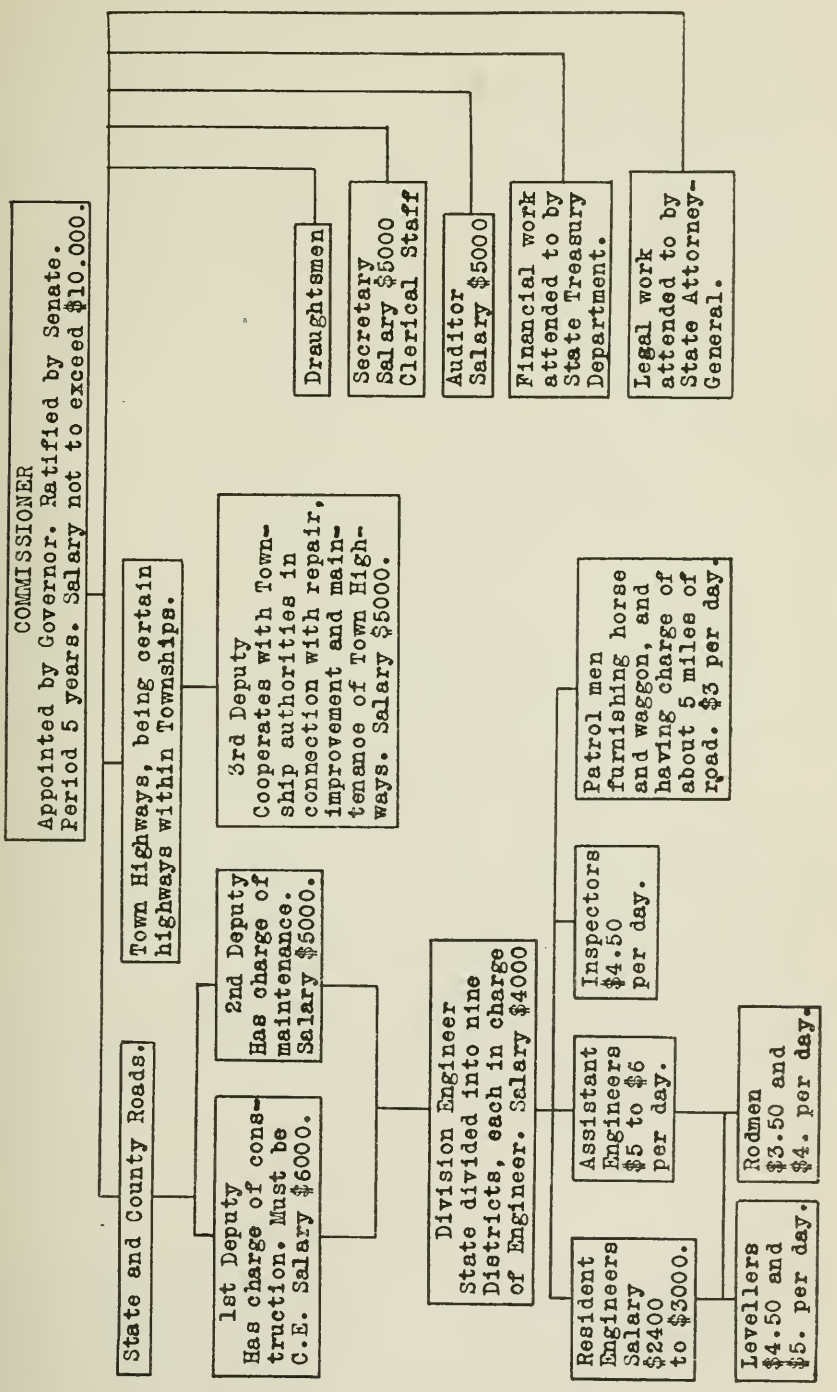
On January 1st, 1913, there had been improved 3,578 miles of state and county highways; 1,627 miles were under contract and 298 miles were expedited routes provided for in the expediting bills of 1910-11, leaving 6,483 miles of state and county highways to be improved, thus making up the total of 11,997 miles in the contemplated system of state and county highways. The system of state highways provided for by the legislation comprises 3,617 miles, and the county highways 8,380 miles. This system of state highways was provided for by a law passed in 1907 which directed the state engineer to prepare a map showing a comprehensive system of highways to be improved throughout the state. The routes were definitely located by the state engineer and approved by the county board of supervisors and a map was then prepared and submitted to the legislature, which in 1908 adopted the system. It was found as the work went along that the construction under the original plan, resulted in disjoined, uncorrelated sections of road; a law was therefore passed in 1910 which provided for expediting the route between Albany and Buffalo and this was followed by legislation in 1911 which provided for the speedy completion of 1,464 miles of trunk line highways. The average cost per mile of the first 1,050 miles of state highways was stated by Mr. C. Gordon Reel, former State Superintendent of Highways, to have been $11,452, and the average cost of the next 1,848 miles of highways was $12,236 per mile. These costs are further verified by a report to the Joint Congressional Committee on Federal Aid in the Construction of Post Roads in which the New York State Highway Department gave the cost of water bound macadam under typical and average conditions as about $12,000 per mile and macadam with asphalt grout at about $13,700 per mile.

On January 1, 1913, the state highway department reported 3,578 miles of town highways macadamized; 8,500 miles improved as gravel roads, and 50,000 miles shaped, crowned, and standardized as to width. Considering only the hard surfaced roads, including gravel, as improved roads, the report would indicate the total mileage of improved roads as 15,666 or about 19.06 per cent. of the total of all roads, both improved and unimproved, which is approximately 80,000 miles.

The Bureau of Maintenance reported that it had during 1912 re-surfaced, repaired and oiled 1,215 miles of highways, at a total outlay for sweeping, oiling, material for cover, guard rail, concrete, tools and plant, extraordinary repairs and miscellaneous, exclusive of patrol, of $2,350,810 which would indicate an average outlay per mile of over $1,900.00. The United States Office of Public Roads gives the cost of maintenance on New York State and County Highways in 1912 as an average of $1,009.00 per mile.

The Bureau of Town Highways reported during the year 1912 that $1,665,000 was expended as state aid to town highways, which, combined with the local highway tax, made a total amount available of approximately $7,252,000. This would give an average amount per mile per annum for town highways of something over $97, of which the state contributed over $21.

NEW YORK STATE HIGHWAY ORGANIZATION.


COMMISSIONER
Appointed by Governor. Ratified by Senate.
Period 5 years. Salary not to exceed $10.000.
Draughtsmen
Secretary
Salary $5000
Clerical Staff
Auditor
Salary $5000
Financial work attended to by State Treasury Department.
Legal work attended to by State Attorney-General.
State and County Roads.
Town Highways, being certain highways within Townships.
3rd Deputy
Cooperates with Township authorities in connection with repair, improvement and maintenance of Town Highways. Salary $5000.
1st Deputy
Has charge of construction. Must be C.E. Salary $6000.
2nd Deputy
Has charge of maintenance. Salary $5000.
Division Engineer
State divided into nine Districts, each in charge of Engineer. Salary $4000
Patrol men furnishing horse and waggon, and having charge of about 5 miles of road. $3 per day.
Inspectors $4.50 per day.
Resident Engineers Salary $2400 to $3000.
Assistant Engineers $5 to $6 per day.
Rodmen $3.50 and $4. per day.
Levellers $4.50 and $5. per day.

Organization of State Highway Department.

The state highway commissioner is appointed by the governor, with the consent of the Senate for a term of five years at a salary of not to exceed $10,000 per annum. He appoints a secretary, an auditor and three deputy commissioners; the first deputy has charge of plans, specifications, and the execution of all contracts awarded by the department; the second deputy has charge of the maintenance of state and county highways, and the third deputy's duty relates to the improvement and maintenance of town highways and bridges. The secretary has charge of clerical and administrative work; the auditor has charge of financial work in conjunction with the state treasury department, and the legal work of an advisory character is done by the state attorney-general. The state is divided into not more than nine divisions, each in charge of a division engineer, who has charge of the construction and maintenance in his division and consequently reports to the first and second deputies. Under the division engineer are resident engineers, assistant engineers, inspectors and patrolmen. The county superintendents, who are appointed by the boards of supervisors of the respective counties, or, upon their failure to appoint, are appointed by the state highway commission, and the district superintendents, who are appointed by the state highway commission in lieu of the county superintendents and have charge of districts made up of more than one county, are under the direction of the commission. The town superintendents of highways are also subject to the regulations of the state highway commission and are required to report annually to the county or district superintendents. This organization gives to the state highway commission some measure of control over practically the entire mileage of roads in the state and, therefore the most highly centralized of any state highway system now in effect.

Motor Vehicle Legislation.

The law provides that the registration fees are in lieu of all taxes to which motor vehicles may be subject. The fees for registration are as follows: five dollars for 25 horse-power or less; ten dollars for more than 25 horse-power and less than 35 horse-power; fifteen dollars for 35 horse-power or less than 50 horse-power; twenty-five dollars for 50 horse-power or more.

If a motor vehicle is originally registered after August 1st in any year the registered fee for that year is half of the fee provided for. The law provides that all moneys received under the motor vehicle law shall be appropriated for the maintenance and repair of the improved roads of the state under the direction of the state commission of highways.

III. PENNSYLVANIA.

General Information.

The state has a land area of 44,832 square miles of which 29,033 square miles consist of farm land. The population in 1910 was 7,665,111 of which 60.4 per cent. was urban and 39.6 per cent. or 3,034,442 was rural, thus giving an average rural population per square mile of farm land of 104.5. The average population per square mile of land area was 171. In 1910 there were 263 municipalities having a population of 2,500 inhabitants or more. There are about 95,000 miles of road in the state thus giving about 2.12 miles of road per square mile of land

area. The population per mile of road on the basis of 1910 census was 80, and the rural population per mile of road was about 32, and 3.26 miles of road per square mile of farm area.

The assessed value of all property in 1912 was $5,917,119,205; this valuation is probably considerably under actual value but no ratio between assessed and actual value is obtainable. This valuation would give an average assessed value per square mile of land area of about $132,000, and an average assessed value per mile of road of about $62,000. The average value of farm land per acre in 1910 was $33.92, an increase of $4.22 per acre, thus making an increase in the value of 18,586,000 acres of $78,433,000 during the ten year period.

Political Organization.

There are 67 counties in the state, for each of which the governing body is a board of three county commissioners elected by the people and holding office three years. The county commissioners are authorized to levy a tax not to exceed 2 mills on the dollar upon all property to improve important county roads. The counties are divided into townships in each of which the governing body is a board of three township supervisors. One member of the board is elected annually. The township board is authorized to levy a road tax not to exceed 10 mills on the dollar for road purposes. In most of the counties of the state the township is the local unit for road work.

Classification of Highways.

The main travelled routes between county and city and the main travelled routes leading to the state line and between the principal cities, boroughs and townships are declared by law to constitute a system of state highways, to be constructed and maintained at the sole expense of the Commonwealth. This system has a total length of about 9,000 miles and comprises 296 routes. In addition to the state highways the state grants aid to counties and townships for the improvement of roads not included in the system of state highways. For these state aid roads the state pays 50 per cent. of the cost of improvement and subsequent maintenance, and the county and township, if they make joint application for such improvement, each pay 25 per cent. of the cost of improvement and the township pays 50 per cent. of the entire maintenance. When a county or township alone applies for aid, the county or township making the application pays 50 per cent. of the cost of improvement and 50 per cent. of the cost of the subsequent maintenance. The state aid is apportioned among the several counties in accordance with the mileage of county and township roads in the counties. The maintenance of such roads is under the direct control of the state highway department which collects back from the local subdivisions the 50 per cent. which they are required to pay. The remainder of the roads are county or township roads and are constructed and maintained by these respective units.

State Indebtedness.

On December 1, 1911, the interest-bearing debt of the state was as follows:

3½ per cent. bonds due Feb. 1, 1912	$532,250 00
4 per cent. bonds due Feb. 1, 1912	1,112,150 00
6 per cent. Agricultural Transcript-bonds	500,000 00
6 per cent. proceeds from sale of experimental farms	17,000 00
Total	$2,161,400 00
Non-interest-bearing debts and debts on which interest has ceased	134,110 02
Total debt	$2,295,510 02
Credit by sinking fund assets	2,396,683 22
Net surplus in fund	$101,173 20

Pennsylvania practically has no debt, as its sinking fund exceeds its liability.

An amendment to the constitution authorizing a $50,000,000 state bond issue for the construction of state highways was defeated at the last election.

Revenues and Expenditures.

The receipts for the general fund of the state from all sources for the year ending November 30, 1911, were $32,100,591.40 and the disbursements $29,042,086.37.

The principal sources of revenue for the state government are as follows:

Tax on capital stock of corporations	$11,519,000 00
Tax on collateral inheritance	1,587,000 00
Tax on corporate gross receipts	1,647,000 00
Tax on corporate loans	2,079,000 00
Tax on foreign fire insurance companies	1,475,000 00
Tax on personal property	4,746,000 00
Tax on bank stock	1,045,000 00
Retail liquor licenses	648,000 00
Wholesale liquor licenses	750,000 00
Automobile licenses	428,000 00
Brewers' licenses	322,000 00
Wholesale mercantile licenses	315,000 00

The principal items of expenditure were as follows:

Public school appropriations paid to counties	$5,689,000 00
State tax on personal property returned to counties	3,559,000 00
Hospitals, miscellaneous	2,986,000 00
Hospitals for insane	1,907,000 00
Department of Health	1,540,000 00
Commonwealth's portion of road tax paid townships that abolish work tax	1,180,000 00
Judiciary	1,124,000 00
Commissions, miscellaneous	806,000 00
Highway construction	700,000 00
Institutions	858,000 00
Training schools	869,000 00

The gross tax on personal property levied by the state was at the rate of 4 mills on the dollar. The valuation was $1,199,000,000.00 and the total amount derived was $4,795,000, three-fourths of which was returned to the counties from which it was derived.

Road Construction and Maintenance.

State participation in road building was inaugurated by an Act of the General Assembly approved April 20, 1903, which provided for a state highway department in charge of a state highway commission. Between June 1, 1903 and May 31, 1911, the total amount appropriated for reconstruction work by the department was $9,500,000. Of this amount 90 per cent. was apportioned to the counties of the state in proportion to mileage of township roads; the remaining 10 per cent. was distributed as a maintenance fund to the townships and counties having improved roads. Of the roads constructed under the state aid law the state paid 75 per cent. of the cost and the counties and townships the remaining 25 per cent. The length of the road reconstructed under this act was about 850 miles, the total cost of which was about $9,000,000 or $10,588 per mile, of which engineering and

inspection amounted to 1.95 per cent. and 2.87 per cent. respectively. The state also contributed to the cost of maintenance exceeding 75 per cent. of the average annual cost, for something over 2,000 miles of road. The law was amended in 1909 so as to give the highway department oversight of approximately 88,000 miles of unimproved roads by requiring the township officials to make annual reports to the department, and by allowing to each township maintaining the cash road tax system an allotment from the state equal to 50 per cent. of the amount of road tax collected in the township provided that no township should receive more than $20 annually for each mile of township road. In 1911 a law was enacted providing for a state highway system having a total length of 8,798 miles and connecting the counties and the important cities of the state. The system of state highways was to be improved and maintained entirely at the cost of the state. The state aid provisions for other roads remained practically unchanged. An appropriation of $3,000,000 was made for the construction and repair of the state highway system and for the payment of the state's share of the maintenance of state highways. An additional $1,000,000 was appropriated to be applied to the improvement of state aid highways. The mileage and cost of state highways from June 1, 1911, to October 30, 1913, is given as follows:

	Length, miles	Total cost	Average cost per mile
		$ c.	$ c.
Water bound macadam	86.23	717,404 95	8,319 66
Ashphaltic macadam	48.79	759,820 86	15,573 27
Ashphaltic concrete	41.17	885,698 42	21,513 19
Brick	8.94	232,477 12	26,004 15
Cement concrete	2.71	50,718 62	18,715 35

The mileage and cost of state aid highways from June 1, 1911 to October 30, 1913 are as follows:

	Length, miles	Total cost	Average cost per mile
Water bound macadam or telford	16.07	$147,019 37	$9,147
Ashphaltic macadam	46.42	777,122 35	16,763
Asphaltic concrete	8.90	204,767 76	23,007
Brick	20.36	478,704 62	23,512
Cement concrete	.45	7,404 00	16,453

The state highway department reports a total of about 95,000 miles of road in the state and that previous to June, 1911, 822 miles of state highways had been improved and from June, 1911 to October 30, 1913, 186.8 miles had been improved, making a total on the latter date of 1,008.8 miles of improved state highway.

From the foregoing it appears that while the water bound macadam roads formed the largest percentage of state highway construction in the early stages of the work, they have been very largely supplanted during the past few years by asphaltic macadam and to a more limited extent by brick and asphaltic concrete. The cement concrete type does not appear to have been employed to any considerable extent by the state highway department. Maintenance costs do not appear to be available.

Organization of State Highway Department.

The state highway commissioner, who receives a salary of $8,000 per annum is appointed by the governor. A first deputy state highway commissioner at $6,000, a second deputy state highway commissioner at $6,000, a chief engineer at $7,000, and an auditor at $3,000, are also appointed by the governor. The law also provides for the appointment by the state highway commissioner of an engineer of bridges at $3,600; fifty superintendents of highways at $1,500 each, a chief draftsman at $2,400 and a chief clerk at $2,400. The state highway commissioner may also appoint as the work may require fifteen assistant engineers at $2,400 each, four assistant draftsmen at $1,800 each, two book-keepers at $1,600 each, four stenographers at $1,200 each and additional clerical and stenographic assistants at not more than $1,000 each as may be required.

The following diagram illustrates the organization of the department:

Commissioner.

1st Deputy. | Chief Clerk. | 2nd Deputy.

Supt of Road Signs. | Auto. Division Registrar | Auditor.

Chief Engineer.

Engineer of Bridges
Assistant Engineer.
Experimental Department. | Supt. of Roads.

Chief Draftsman. | 15 Asst. Division Engineers.

IV. OHIO.

General Information.

The state has a land area of 40,740 square miles of which 37,648 square miles or 92.4 per cent. comprised farm land in 1910. The population in 1910 was 4,767,121 of which 55.9 per cent. was urban and 44.1 per cent. or 2,101,978 was rural. The average population per square mile of land area in 1910 was 117 and the average rural population per square mile of farm area was 55.8. There were 138 municipalities having a population of 2,500 inhabitants or more in 1910. The total mileage of all roads in the state is 88,861 or 2.18 miles per square mile of land area and 2.36 miles of road per square mile of farm area. The total population per mile of road in 1910 was 52.64 and the rural population per mile of road in 1910 was 23.65. The average value per farm of farm property in 1910 was $6,994, the average size of farms 88.6 acres, and the total number of farms 272,045. There was an increase in value per acre of farm land from 1900 to 1910 of $19.99, which, applied to the 24,105,000 acres, means an increase of about $480,000,000 in value in farm land during the ten years period. The assessed value of all property in 1912 was $6,481,000,000, which is subdivided as follows:

Real Estate in cities and villages	$2,599,395,531—40.1%
Farm lands	1,736,249,999—26.7%
Public utilities	1,171,395,860—18.0%
Banks	175,966,466— 2.7%
Personal property	798,037,331—12.5%

The ratio of assessed to actual value was 100 per cent. This would give a value per square mile of land area of about $159,000, a value per mile of road of about $71,225, and a value per capita of about $1,362.

Political Organization.

The state is divided into 8 counties, in each of which the governing body is a board of three county commissioners, who are elected by the people for two years. The board has charge of county roads and under their control is a county surveyor who has direct charge of actual work on county roads. The counties are divided into townships in which the governing body is a board of township trustees consisting of three members elected in November of odd years. Township roads are under control of the Board of Trustees.

Classification of Highways.

The highways may be classed as main market roads, the routes for which are specified in an Act approved April 15th, 1913; inter-county roads provided for in an Act approved June 9, 1911; county roads, and township roads. The Act providing for the main market roads calls for an annual tax levy of one-half mill on all taxable property in the state, 75 per cent. of the money from this levy is to be applied to the maintenance of the state highway department and for the construction and maintenance of the inter-county system of highways and 25 per cent. for the construction and maintenance of the main market roads. On the basis of 1912 assessed valuations the levy would produce $3,405,000 of which $2,405,00 is to be expended as state aid on the inter-county highways, to which the county and townships must add an equal amount making a total of $4,810,000. For the inter-county highways the counties are required to contribute 25 per cent. of the cost and the townships 25 per cent. of the cost. The remaining 25 per cent. of the levy amounting to $851,000 is to be expended on the main market roads for which no local contribution is required. The law also provides for supplying state convicts to the state highway department for work on the highways as may be desirable.

State Indebtedness.

The state has no state indebtedness. An amendment to the constitution authorizing the state to borrow money for constructing highways was defeated at an election held in 1912.

Highway Construction and Maintenance.

The state highway department was established in 1904. The total mileage of improved state roads constructed with the aid of the state funds from the establishment of the department to November 15, 1912, was 247.82 miles. As indicating

the cost of types of road the following table shows contracts completed from November 15, 1911 to November 15th, 1912:

Type	Total mileage	Total cost	Average cost per mile
Brick	19.96	$292,459 37	$14,652 22
Concrete	2.38	18,365 00	7,716 34
Bituminated concrete	1.61	12,285 00	7,630 42
Concrete and macadam	3.10	21,725 00	7,008 06
Waterbound macadam	39.77	237,640 49	5,975 12
Bituminous macadam	9.68	66,338 61	6,842 82
Gravel macadam	3.46	11,069 00	3,199 13
Totals	79.96	$659,882 47	.....

The inter-county and main market roads are constructed under the supervision of the state highway commissioner, who is also required to give advice to local authorities and to do educational and investigating work. The inter-county highway system was designated in accordance with an investigation conducted by the state highway commissioner under an Act of the Legislature directing him to designate by name and number the main roads of the state so as to form a continuous and connected highway system. The inter-county highways are improved upon application by the county commissioners to the state highway commissioner and approved by him. He causes plans and specifications to be made, advertises for bids, and, with the approval of the county commissioners, awards contracts. As already stated the cost of county highways is met as follows: 50 per cent. by the state; 25 per cent. by the county and 25 per cent. by the township. The main market roads are to be constructed and maintained entirely at the expense of the state. The maintenance of inter-county highways is under the immediate control of the state highway commissioner and the cost is apportioned on the same basis as the construction cost. The state's share of the maintenance funds is provided by annual appropriation and the county's and township's shares from their respective road or road repair funds.

A revision of the state highway law was provided by an Act passed April 19, 1913. So far as the inter-county highways are concerned the new law has extended to townships the same right to make application for state aid in the construction or maintenance of inter-county highways as was given to county commissioners under the old Act. The county and township authorities are allowed to proceed with the improvement of any portion of the inter-county highway system without state aid, provided that they first submit plans and specifications to the state highway commissioner. The county commissioners may waive the portion of cost to be paid by the township or abutting property owners and assume any part or all of the cost of such highway improvement in excess of the amount received from the state that they so desire. The township may likewise waive any part of the portion of the cost to be paid by the county for abutting property owners and assume any part or all of the cost in excess of the amount received from the state. The county commissioners are authorized to levy a tax of not exceeding one mill for the purpose of providing funds for the construction and maintenance of highways under this Act. Townships are also authorized to levy a tax of not exceeding three mills for the purpose of providing funds for the construction of highways under this Act. The new law provides that the state highway commissioner shall maintain all inter-

county highways, main market roads, bridges, and culverts, constructed by the state, or by the aid of state money, or taken over by the state, and the state may pay the entire cost thereof, but nothing in the act to be construed to prohibit counties, townships, municipalities, the Federal Government, or private parties contributing any portion of the maintenance cost. This would indicate that it is discretionary with the state highway commissioner as to whether the counties and townships shall pay half the maintenance cost of inter-county highways.

Organization of State Highway Department.

The Act, approved April 19, 1913, provides that the Governor shall, with the advice and consent of the Senate, appoint a state highway commissioner at a salary of $4,000 per annum, to serve for a term of four years. The commissioner is required to be a civil engineer and experienced in road construction. The state highway department is divided into three bureaus, known as Bureau of Construction, Bureau of Maintenance and Repair, and Bureau of Bridges. The Commissioner, with the approval of the Governor, appoints three deputy highway commissioners, not more than one of whom shall be of the same political party as himself, and all whom shall be competent civil engineers. Each of these deputies is in charge of a bureau and each receive $3,000 per annum. The commissioner may also appoint four division engineers in the Bureau of Construction, two in the Bureau of Maintenance and Repair, and two in the Bureau of Bridges, and such additional division engineers as may be necessary from time to time. The division engineers shall receive not more than $2,500 per annum. He may also appoint a chief clerk at not more than $2,000 per annum and a secretary at a salary not to exceed $2,000 per annum. He may also employ such other assistants as may be required.

V. MICHIGAN.

General Information.

The state has a land area of 57,480 square miles. The land in farms in 1910 comprised 29,612 square miles. The population in 1910 was 2,810,173, of which 47.2 per cent. was urban and 52.8 per cent. or 1,483,129 was rural. There were 79 municipalities having a population of 2,500 inhabitants or more in 1910. The assessed value of all taxable property in the state for the year 1912 was $2,288,000,000, or an average value per square mile of land area of about $39,800 and an average per capita of $814. It is claimed that the assessment represents about two-thirds the valuation. Consequently the actual wealth of the state is over $1,200 per capita. There are approximately 70,000 miles of road in the state. The average assessed value of property per mile of road would be about $32,700 and the actual value per mile of road would be about $49,000. The mileage of roads is about 1.22 per square mile of land area, or, relatively speaking, about half the mileage of the state of New York. This is due largely to the fact that the state of Michigan is divided into two parts, commonly known as the upper peninsula and the lower peninsula. The upper peninsula is to a great extent an undeveloped territory and the principal industry is mining. The lower peninsula is an important agricultural region, and consequently has a much higher ratio of roads per square mile of land area than the upper peninsula.

Political Organization.

There are 83 counties in the state, the governing body consisting of a board of supervisors, one supervisor from each organized township, elected by the people. Under the present highway laws, the work of highway improvement is carried on by townships, by good roads districts and by counties. Under the township system the highway work of a township is in charge of a township highway commissioner acting under the supervision of the township board. Road districts may be formed by any combination of townships, villages or cities forming a continuous area in any county. Road work in these districts is in charge of a body known as a board of good roads commissioners, consisting of one member from each township, incorporated village or city included in the district. Under the county system the work is in charge of a board of county road commissioners, not exceeding five in number. Whether or not a county shall operate under the county system is decided by the townships included in the county, a petition from not less than ten per cent. of the resident freeholders in each of the several organized townships, villages and cities of the county being required to bring the matter up for consideration and a majority vote in favor of the adoption of the county system being necessary to carry the measure. In counties where the system is in operation all roads in townships, except county roads, are under the care and supervision of the township boards and the highway commissioner, as in cases where the county system does not prevail. In the event that a county, in which road districts have been formed, subsequently adopts the county system, the road districts are automatically dissolved except for the completion of work under contract, and the funds of the district are paid back to the units composing it. Townships which have adopted the township road plan, as provided for by the law of 1895, and which have carried on work under that plan may continue under it until such time as the township votes to abolish it, and while working under the township system the town is not liable to any tax for the county road system without its consent, provided that the county in which the township is situated adopted the county system previous to 1913.

Classification of Highways.

The public highways of the state may be classed as trunk line state reward highways, state reward highways, county highways and township highways. The first class receives aid from the state in the form of reward; the second class receives reward in half the amount paid to the first class; the third class is maintained and improved by the county without state reward; and the fourth class is maintained and improved by the township without aid from the state or county. The state grants rewards to local roads which have been completed in accordance with specifications of the state highway department and have been accepted by it. The state reward roads are composed of seven classes, known as classes A to G inclusive. Class A consists of sand clay roads or equivalent, for which the reward is $250 per mile, the amount increasing $25 for each additional foot in excess of 9 feet and up to 16 feet; Class B consists of gravel or equivalent, for which the reward is $500 per mile with an extra $50 per mile for each additional foot to 16 feet; Class C consists of two course roads of crushed stone or gravel or its equivalent, for which the reward is $750 per mile and an extra $75 for each additional foot in width; Class D consists of two course roads with a surface of crushed stone not less than 3 inches compacted, for which the reward is $750 per mile and an additional $75

for each additional foot of width; Class E consists of waterbound or bituminous macadam laid in courses and not less than 6 inches thick, for which the reward is $1,000 per mile with an additional $100 for each foot of width; Class F comprises Portland cement concrete roads with or without paving brick surface, for which the reward is $1,000 per mile with an additional $100 per mile for each additional foot of width; Class G comprises brick roads with curbs, for which the reward is $1,000 per mile with an extra $100 per mile for each additional foot of width. The trunk line reward roads receive double state reward and the routes are specified in the trunk line highway act.

Revenues and Expenditures.

The total receipts of the state treasurer for the fiscal year ending June 30, 1913, were $13,434,472.52. Of this amount $7,513,321.45 constituted the general fund of the state, and $5,903,524.96 the specific tax fund made up of taxes on corporations and applied principally to primary school fund. The receipts to the general fund were made up principally of property taxes through county treasurers, $5,856,961.35; mortgage tax receipts, $185,391.85; state prison revolving fund, $328,886.58; inheritance license, $25,228.55. The disbursements from the general fund were $7,463,179.04, made up principally of the following: University of Michigan, $1,055,500; state highway department, $347,275.96; support of insane at six state hospitals, $1,212,950.26; state prison revolving fund, $329,297.38; legislature, $173,298.22; salaries of state officers, $574,709.26; soldiers' home, $200,000; agricultural college, $219,800; normal schools, $385,000; state prison, $187,766.77. The railroad taxes paid during the year $4,150,190.84, the largest taxpayer among the railroads being the Michigan Central, which paid $702,077. The express companies paid $35,827; the sleeping car companies, $12,481; the freight, refrigerator and car loaning companies, $277,580; the fire insurance companies, $274,000; the telephone companies, $589,202; in addition to these taxes were paid by a number of other companies.

The expense of running the state government, excluding the amounts collected from corporations and applied to primary school fund amounted during the last fiscal year to about $2.70 per capita upon the 1910 population basis.

The state does not appear to have any general indebtedness; the total property tax levied in the counties for 1912 was $39,315,699.16, made up as follows:

State tax	$6,523,013 22
County tax	4,717,880 81
Township tax	1,191,002 69
School tax	8,532,423 35
Highway tax	3,471,432 39
County road tax	815,227 24
Drain tax	216,059 66
City tax	12,344,155 80
Village tax	1,490,847 76
Rejected tax	13,656 24
Total	$39,315,699 16

This would make the average tax rate on property for all purposes of about $0.017. The railroads paid taxes amounting to $4,372,144.50.

The recent trunk line highway act directed the auditor general to incorporate in the state tax for 1913, $200,000 and for 1914, $300,000 to reimburse the general fund for the appropriations made for trunk line highways.

Highway Construction and Maintenance.

On January 1st, 1913, there had been completed with the aid of the state funds 1,754.27 miles, on which the state paid in the form of rewards $1,164,392. The State Highway Department reports that the gravel roads of the state cost on an average $2,100 per mile and receive a reward of $500 from the state. The macadam roads cost about $4,300 per mile and receive $1,000 reward from the state. The concrete roads cost about $10,000 and receive $1,000 reward. The combination of crushed stone and gravel road costs $3,750 per mile and receives $750 reward. The clay gravel roads cost about $1,500 per mile and receive $250 per mile reward. The average reward paid by the state on the total mileage of state rewards roads constructed is about $664. In addition to rewards, the last legislature appropriated $50,000 as a deficiency appropriation, $450,000 for the state reward fund for the ensuing year for which $18,000 was for departmental expenses, $200,000 for the state trunk line fund for the fiscal year 1913, and $300,000 for the state trunk line fund for the fiscal year 1914. Besides these amounts the department has, beginning January 1, 1914, received the funds from automobile licenses, which are expected to provide $750,000 during 1914.

The trunk line highway system, referred to under "Classification of Highways" consists of about 3,000 miles of road. The state highway commissioner calls attention to the fact that for the most part Michigan is still building gravel and macadam roads, although a number of miles of concrete roadways have been built in the state, mostly in Wayne County. He contends that the cheaper types of road are entirely adequate to meet the demands of traffic except in the vicinity of the cities, and that to build more expensive types of road would be folly.

As an indication of the outlay for road work in Michigan, it may be stated that in 1912 the state highway commissioner estimates the total expenditure at $4,750,000, and that for 1913 it was very nearly $5,000,000 or abobut $71.50 per mile. It is estimated by the state highway commissioner that there are in the state about 2,000 miles of improved high roads in addition to the 1,754 miles constructed as state reward roads. This would make the total mileage of improved roads in the state about 5 1-3 per cent.

Organization of State Highway Department.

The state highway commissioner is elected by the people and is required to provide rules and regulations in accordance with which roads must be constructed in order to receive state rewards. The state highway department has no direct part in the construction of roads. The department is also charged with the giving of instruction in the improvement of roads and bridges, the collection of data, and the distribution of the state reward funds. Under the recent trunk line highway act, the state highway department is required to design all bridges and culverts and construct all bridges of a greater span than 30 feet on state reward trunk line highways. The state highway commissioner has as his assistants two deputies and under them such employees as are necessary.

VI. MINNESOTA.

General Information.

The state has a land area of 80,858 square miles. The land in farms comprises 43,280 square miles, or 53.5 per cent. of the total area. The population in 1910 was 2,075,708, of which 41 per cent. was urban and 59 per cent. or 1,225,414 rural, thus giving an average population per square mile of land area of 25.7 and a rural population per square mile of farm land of 28.3. There were 48 municipalities having a population of 2,500 inhabitants or more in 1910. The total mileage of all roads in the state was 79,323 or .981 miles of road per square mile of land area, the state of New York and Massachusetts having nearly two and a half times the miles of road per square mile of land area. The total population per mile of road in 1910 was 26.17, and the rural population per mile of road 15.45. The assessment made in 1911 for 1912 gave the value of land and structures at $664,930,374; the value of city property $370,595,899; the value of taxable personal property $177,041,521, and the value of taxable personal property under a special classification provided by chap. 289 of 1911 laws, $115,676,126, making a total of $1,328,243,920. This valuation is considerably under the actual value. The average assessed value of land per acre under the 1911 assessment shows $15.45, whereas the census gives the average value in 1910 as $36.82. It would, therefore, seem fair to suppose that the actual value of property in Minnesota is more than double the assessed value. On this basis, the assessed value per square mile of land area would be $15,500, the assessed value of mile of road, $16,800: the wealth per capita would on assessed valuation be $640. Farm land increased in value from 1900 to 1910 on an average of $15.51 per acre according to census reports. This amount pro-rated over the 27,675,000 acres would show a gain in value of over $429,000,000.

Political Organization.

The state is divided into 86 counties, in each of which the governing body is a board of five county commissioners elected by the people for a term of four years. The board of commissioners has control over the county roads. The counties are further divided into towns, in each of which the governing body is a board of three supervisors, elected for a term of one year. The board of supervisors has control over township roads. The county boards have authority to designate established roads in the county as State roads. If the cost of improvement is over $500 the board has an assistant state engineer prepare surveys, plans and specifications, which are submitted to the state highway engineer. If he approves the same the county board proceeds to do the work of improvement under the supervision of an assistant state engineer, who acts under the direction of the state highway engineer.

Classification of Highways.

The roads of the state are classified as state roads, county roads, and town roads. The state roads at the close of 1911 comprised 12,688 miles. These roads, as has already been explained, are designated in the first instance by county boards. The state roads have generally been located to suit the convenience of farm com-

munities, but the state highway department is preparing to unite these various highways into a trunk line system under Chap. 254 of the General Laws of 1911. Half of the cost of improving state highways is paid by the state. Minnesota appears to have no state debt.

Revenues and Expenditures.

The state tax levy for the fiscal year 1912 was 1.7 mills, the maximum allowed by law being 1.9 mills. At the general election held in November, 1912, an increased tax on railroad property was authorized. The tax was formerly 4 per cent. and was increased to 5 per cent., the additional 1 per cent. producing about $1,000,000. The total revenues of the state prison twine plant, the drainage commission, and half the expenditures of the university and agricultural college, amounting in all to about $2,275,000, were paid from funds other than state revenue. The principal sources of revenue were as follows for 1912:

State tax levy	$1,856,494 03
Railroad tax	3,738,701 28
Freight line taxes	4,131 10
Insurance taxes	413,259 75
Telegraph taxes	36,450 00
Express company taxes	63,856 11
Telephone taxes	166,515 30
Sleeping car taxes	10,273 86
Inheritance taxes	678,512 99
Inebriate hospital taxes	47,842 97
Vessel tonnage taxes	15,074 92
Insurance department fees	71,780 50
Incorporation fees	94,525 00
Oil inspection fees	63,354 35
Interest on bank balances	44,344 00
Motor vehicle licenses	60,168 00
Banking department fees	25,890 00
Game and fish commission	23,973 12
Hunters' licenses	25,158 20
States institutions' earnings	537,031 84
Miscellaneous	275,458 98
Total	$8,242,796 54

At the general election, November 5, 1912, a state tax of not to exceed one mill was adopted for the purpose of providing a state road and bridge fund. This levy produces about $1,250,000. The total levy on the part of the state is made up as follows:

Revenue fund	1.9 mills
Soldiers' relief fund	.1 "
State road and bridge fund	1.0 "
University campus fund	.15 "
Total	3.15 "
General School Fund	1.0 "
General university school fund	.23 "
Grand total	4.38 "

As the expenditures are about equal to the receipts it follows that the per capita expense for conducting the state government is about $4.00.

Highway Construction and Maintenance.

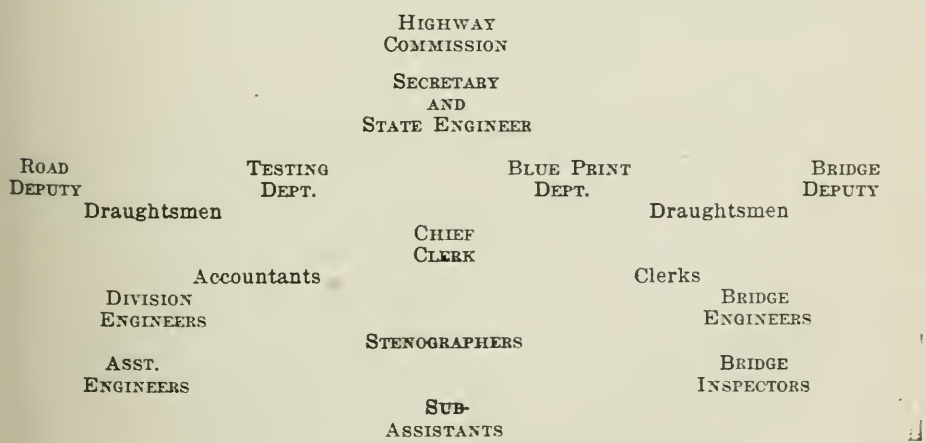
At the close of 1911 the results accomplished on state roads were as follows: Roadbed improved and graded, 1,085.7 miles; roadbed gravelled, 409.6 miles; road macadamized, 49.4 miles; sand clay road, 20.8 miles; total number of bridges, 122; total number of metal and concrete culverts, 17,081 linear feet.

The allotment for 1911 on state roads was $79,300 which, added to the total previous allotment, would make a total allotment by the state to the close of 1911 of $360,240.

As to the cost of road construction it may be stated that a report to the Joint Congressional Committee on Federal Aid in the Construction of Post Roads made in January, 1913, by the state highway commissioner, gives the cost of a typical macadam road with six inches of compacted material and nine feet width of metal surface at $4,325. A 16-foot road at the same rate would, therefore, be in the neighborhood of $7,000. He gave the cost of the gravel road with the same dimensions at $2,815 a mile, and of a concrete road 16 feet wide at $11,910 a mile. No definite maintenance figures are at hand.

Organization of State Highway Department.

The state highway commission consists of three members appointed by the Governor and holding office for three years, one new commissioner to be appointed each year. The commission appoints a secretary, who is also state engineer, who holds office at the pleasure of the commission. They also employ other assistants and fix their compensation. The state engineer makes surveys, establishes grades, prepares plans and specifications, and has supervision of all work on state roads; he is also required to give expert advice and perform such other engineering services for the state as the Governor may require. He is also required to make an annual inspection of all bridges exceeding 30 feet in length and make a report to the state highway commission. The commission is given authority to do investigative work, hold public meetings, etc. An organization chart of the state highway department is attached hereto.



VII. WISCONSIN.

General Information.

The state has a land area of 55,256 square miles. The land in farms comprises 32,906 square miles. The population in 1910 was 2,338,860, of which 43 per cent. was urban and 57 per cent. or 1,329,540 rural, thus giving an average population per square mile of land area of 42.2 and a rural population per square mile of farm area of 40.4. The assessed value of all property in 1911 was $2,941,412,842, and the ratio of assessed to actual value was about three-quarters. This would give an average of assessed property value per square mile of land area of $53,500.00. The average assessed property per capita would be $1,260.00. (Note that the property values are for 1911 and the population for 1910.) The total road mileage in the state is approximately 63,000 miles, and on this basis the average assessed value of taxable property per mile of road would be about $46,600. The average mileage of roads per square mile of land area is 1.14, and the average mileage of roads per square mile of farm land area in the state is 1.91.

As nearly three-fifths of the people of the state live in rural districts it is evident that the state requires an extensive system of rural highways by which the farming, dairying, and stock-raising population can get their products to the railroad and market. Consequently the cheaper types of construction are likely to be used to a very considerable extent. As indicating the importance and progress of agricultural development in the state it may be mentioned that there were in 1910 21,060,066 acres of land in farms, and that the increase in value per acre from 1900—10 was an average of $16.59. This increased valuation per acre represents an aggregate increase of $349,386,000 or an amount, which at 5 per cent. interest would yield nearly $17,500,000 a year, or nearly four times the average outlay of the state, the counties and the towns for road work.

In 1910 there were 88 municipalities having a population of 2,500 inhabitants or more. When it is considered that the state has a gross area more than six times that of Massachusetts and that the latter state has 185 municipalities of 185 inhabitants or more, the difference between the transportation requirements of the two states is strongly emphasized. Wisconsin must build its roads from an agricultural standpoint and Massachusetts from an interurban standpoint.

Political Organization.

The state is divided into 71 counties, in which the governing body is a board of county commissioners elected for two-year terms, who are authorized to vote on the method of paying road taxes in their county. The law provides for a selection of a continuous system of roads in each county, to be known as "the county system of prospective state highways" by its county board. The improvements on this system are made by a county highway commissioner, who is selected by the county board, under the general direction of the state highway commission. Aside from the state aid roads, the local road work is largely in the hands of the town officers. General charge of the roads in the towns is in the hands of the town boards of supervisors, consisting of three members elected annually. These officials divide their towns into road districts ranging from one to fifty and place a road superintendent or path-master in charge of each district.

Classification of Highways.

There appear to be only two distinct classes of roads, namely, the state aid roads, which are selected in the first instance by the county boards, and the town roads, which are controlled by the town boards. The state aid roads are constructed by the town, county and state jointly, each paying one-third of the cost, or a county can assume two-thirds of the cost and a state one-third. Bridges over six feet in span are paid for, two-fifths each by the town and county and one-fifth by the state. The state aid roads are improved under the general direction of the state highway commission and in accordance with plans and specifications of the commission. If improved, hard-surfaced roads are maintained by the counties and the dirt roads by the towns.

State Indebtedness.

The total debt of Wisconsin municipalities and counties in 1909 is given as $29,042,316, of which approximately 12 per cent. consists of county debts, 3 per cent. town debts, 5½ per cent. village debts, and 79 per cent. other municipal debts.

The bonded debt of the state, created in 1861-63 for the purpose of carrying on the war for the maintenance of the Union, has now all been paid or converted into certificates of indebtedness to the trust funds, except one thousand dollars, which was paid from the General Fund, August 12, 1888.

Distribution of the debt on June 30, 1912, was as follows:

Certificates	of	indebtedness,	School Fund	$1,563,700 00
"	"	"	Normal School Fund	515,700 00
"	"	"	University Fund	111,000 00
"	"	"	Agricultural College Fund	60,000 00
				$2,251,000 00

Revenues and Expenditures.

The total property tax levied in the state in 1911 was $32,610,975, made up of state tax $4,614,446, county tax $7,422,094, and local tax $20,574,435. The average tax rate for 1911 was, state 1.109 and local 1.738¾. There was derived by the state from the income tax approximately $2,200,000, the number of taxpayers paying income tax being 46,582. Corporations paid over 66 per cent., manufacturers in corporations nearly 11 per cent., professionals nearly 8 per cent. and farmers less than one-third of one per cent. of the income tax. There was derived also from inheritance tax $738,528. An ad valorem tax on railroad corporations produced $3,604,165, the street railways paid $525,128, of which the state retained $78,769. The receipts to the general fund for the year ending 1912 were $7,836,585.03, made up as follows:

Interest on certificates of indebtedness	$157,570 00
Free high schools	150,000 00
Graded schools	120,000 00
New Capitol	.....
Northern Hospital	.....
Suit tax	7,720 00
From counties for charitable and penal institutions	364,244 27
Inheritance tax	783,528 90
Railroad companies	3,594,473 18
Freight line companies	8,473 42
Express companies	16,266 43
Palace and sleeping car companies	12,633 04

Street railway and electric light companies	471,369 07
Telegraph companies	21,741 30
Boom and improvement companies	20 79
Plank road companies	27 06
Fire insurance companies	151,510 12
Life insurance companies	518,107 26
Accident, surety, etc., companies	49,352 91
Telephone companies	77,930 16
Charitable and penal institutions	157,794 16
Fish and Game Department	163,611 07
Miscellaneous	1,014,204 89
Total book receipts (including transfers, agency transactions and refunds)	$7,836,585 03

In addition to the general fund there are certain other funds, such as the school fund income, the university fund income, etc., which consist of moneys collected by the state and distributed under the law to the several localities and to be expended for local purposes. For example, the school fund income and the university fund income each amount to over $2,000,000. Among the principal items comprising expenditures of the general fund during the school year 1912 were the following:

Circuit Courts	$178,596 00
Fish and Game Department	119,161 00
Insane Asylum	495,432 00
Schools for the Deaf	58,741 00
State Park Board	72,579 00
Wisconsin Veteran Home	124,000 00
County agricultural societies	109,900 00
State Capitol	790,029 00
Commissioners of Fisheries	59,172 00
State University	612,911 00
Normal School	433,798 00
County Training Schools for Teachers	76,661 00
Free High Schools	121,822 00
Graded schools	110,700 00

These are in addition to the executive and legislative departments and other large routine items of expenditure. The total net disbursments from the general fund for the year were $5,385,999, and the total net disbursements from eleven funds for the year were $10,664,538.

From the foregoing it would appear that the net annual revenues to the general fund amounted to $3.35 per capita.

Road Construction and Maintenance.

The state aid law was passed by the legislature in 1911, at which time an annual appropriation of $350,000 was made, the work to be done under the following plan: Whenever a town appropriated $400 or more the county was compelled to raise an equal amount, and the state would then add an amount equal to that raised by the town and county respectively, or one-third of the entire sum. In the matter of state-aid bridges, the town and counties each provided two-fifths of the cost, and the state one-fifth. The respective counties outlined a system of prospective state highways which after approval by the state highway commissioner constituted a system of roads on which state aid would be granted. During the first year's work out of 1,195 townships in the state, the commission received applications for state

aid from 532 townships. The outlay by the towns, counties and state on state-aid roads and bridges during 1911-12, the first year's work, was $1,350,000. The roads built during that year were as follows: Crushed stone macadam, 140 miles; gravel macadam, 110 miles; shale, clay and other surface, 35 miles; making a total of about 500 miles of road. The bridge work consisted of 140 state-aid bridges, built at the cost of $111,355, and 120 county-aid bridges, approved by the commission, costing $198,983, making a total amount for state and county-aid bridges in 1912 of $310,339. During 1912 there was available, in addition to the $350,000 appropriation, $28,000, comprising 25 per cent. of the net proceedings of the automobile fund of the state. When the legislature met in January, 1913, it made an additional appropriation, bringing the state's share up to about $816,000, thus making available for the 1913 work under the joint town, county and state arrangement $2,500,000. The roads constructed were as follows: Concrete roads, 26 miles; stone macadam roads, 290 miles; gravel macadam roads, 155 miles; shale or clay surfaced roads, 63 miles; graded but not surfaced, 460 miles; total, 996 miles. This would make a total at the close of 1913 of about 1,496 miles, of which about 936 miles were gravel, 100 miles shale or clay-surfaced, and 460 miles graded but not surfaced. The leading type of construction has been 9-foot gravel and macadam roads. As the total outlay to the close of 1913 has been approximately $3,700,000 for the 1,496 miles of road, the average outlay per mile would be something under $2,500. In the report to the Joint Congressional Committee, February 7, 1913, Mr. A. R. Hirst, State Highway Engineer, reported the average cost of gravel roads as $1,746 per mile, and macadam road $3,570 per mile, this being on the basis of a road nine feet wide. He reported an 18-foot concrete road in Milwaukee County as costing $14,200 per mile. The gravel and macadam roads, if built fifteen feet wide should cost on this basis about $2,600 and $5,700 respectively. The highway commission considers the 9-foot road as decidedly the most economical and practical at the present state of agricultural development in the state, and it expects this width to continue for some time to come. The state highway department also seems very favourably disposed toward concrete roads. For the 1914 work the legislature has appropriated $1,200,000, plus 25 per cent. of the net returns from automobile licenses.

As indicating the growth of road improvement in the state, 1,211 governmental units in the spring of 1913 voted $1,548,839. To this the counties will add an equal amount and the state will add the $1,230,000 available from the registration and automobile fees, making a total available for 1914 of $4,327,778 to be expended under the state-aid plan.

A separate appropriation has been made each year, beginning 1911, for administering the highway department. The appropriation for 1911-12 was $40,000 and $60,000 for 1912-13. The appropriation for administrative work, 1913-14, is $90,000, and for 1914-15 and thereafter, $100,000.

The state highway commission has issued an allotment sheet, showing the amount due each county from the $1,250,000 state highway appropriation based upon taxes voted by townships, villages, cities under 5,000 population and counties.

The work of construction under the Wisconsin plan is carried on under the immediate direction of the county highway commissioner appointed by the county board and the surveys, plans and specifications and final supervision are furnished by the state highway commission. The hard-surfaced roads built under this plan are maintained by the counties and the dirt roads by the towns. There does not appear to be any state supervision of maintenance.

Organization of State Highway Department.

The state highway department was established in 1907 as a division of the state geological survey, with an annual appropriation of $10,000 for educational work. This continued until 1911, when the highway commission in its present form was created. The commission is non-salaried, and consists of three members appointed by the Governor and two ex-officio members, consisting of a state geologist and the dean of the College of Engineering. The following organization chart illustrates graphically the organization of the department.

State Highway Engineer.

Chief Clerk	Chief Inspector	Bridge Engineer	Engineer of Surveys
File Clerk	Asst. Inspector	Asst. Bridge Eng.	Surveyors
Stenographers		Surveyors	Draftsmen
		Draftsmen	

7 Division Engineers
Asst. Engineers
Draftsmen

VIII. CALIFORNIA.

General Information.

The state has a land area of 155,652 square miles, of which 43,582 square miles, or about 28 per cent. of the total land area, comprised farm land in 1910. The population in 1910 was 2,377,549, of which 61.8 per cent. was urban and 38.2 per cent., or 907,810, was rural, or an average rural population per square mile of farm land of 20.8. The average population per square mile of land area was 15.3. There were seventy municipalities having a population of 2,500 inhabitants or more in 1910. The total mileage of all roads in the state is 48,069, or .308 miles of road per square mile of land area and 1.103 miles of road per square mile of farm area. The total population per mile of road in 1910 was 49.47, and the rural population per mile of road 18.88. The average value per farm of farm property in 1910 was $18,308, and the number of farms 88,197. The total assessed value of all property in 1912 was $2,919,855,033, and the ratio of assessed to actual value was about 50 per cent. On this basis the assessed value per square mile of land area was about $18,750, or an actual value of about $37,500, and the assessed value of taxable property per mile of road was about $10,500, and the actual value about $21,000. The assessed value of all taxable property per capita was about $614, and the actual value about $1,228. As an indication of land values it may be stated that the census bureau gave the average value of farm land in California in 1910 as $47.16 per acre, which was an increase of $25.29 per acre, as compared with the value for 1900. As there were 27,931,440 acres of land in farms in 1910, the increased value alone would represent approximately $700,000,000.

Political Organization.

There are 57 counties in the state, for each of which the governing body is a board of county supervisors elected by the people for a term of four years. Under the direction of the board of supervisors is a county surveyor, who has charge of road work in the county. The counties are divided into districts, but the county appears to be the principal unit of local administration. The municipalities of the state are divided into six classes according to population. The larger cities have mayors and councils, and the smaller cities have boards of trustees.

State Indebtedness.

A summary of the net indebtedness of the state by bonds outstanding July 1, 1912, is as follows:

Civil bonds of 1857, 7 per cent		$ 3,500 00
Civil bonds of 1860, 7 per cent		500 00
Funded debt bonds of 1873, 6 per cent		2,277,500 00
Seawall bonds, 1905, 4 per cent	$2,000,00 00	
Value of bonds in Seawall sinking fund	$496,950 00	
Cash in same	3,869 27	
	500,819 27	
Net indebtedness		1,499,180 73
San Francisco Harbour Improvement Bonds of 1909, 4 per cent		1,000,000 00
State Highway Bonds of 1909, 4 per cent		400,000 00
Total net indebtedness, July 1, 1912		$5,180,680 73
Total of bonds outstanding, July 1, 1912		$5,681,500 00

The bond issue redeemed was that of January 1, 1893, consisting of $600,000 4 per cent. bonds, for San Francisco ferry and passenger depot.

Since July 1, 1912, the bonds sold to November 15, 1912, were as follows:

July 11th, $1,200,000 of State Highway bonds.
October 1st, $750,000 of San Francisco Harbour Improvement bonds.
November 12th, $250,000 of San Francisco Harbour Improvement bonds.
November 14th, $400,000 of State Highway bonds.

All sales were made at par and accrued interest. The total state bonds outstanding on November 15, 1912, were therefore $8,281,500.

Total highway bonds sold to October 1, 1913, $4,700,000.

The $18,000,000 bond issue was authorized by vote in 1910 for the construction of a state highway system. The bonds were to bear date July 3, 1914, par value $1,000 each, interest at 4 per cent., payable semi-annually, to mature $400,000 annually from and after July 3, 1917 to 1961, and to be sold in such amounts and at such times as might be desirable. It was contemplated by the framers of the Act providing for the bond issue that the state should pay the principal of the debt and the counties in which the roads were to be located should pay the interest. The Act was unfortunately framed, as the Attorney-General has construed the law to mean that no interest can be charged against a county until there has been expended therein the amount of money on which the interest charge is based. After the county is notified of the interest charged against it about ten months must elapse before the sum can be raised by taxation and paid into the state treasury, and in the meantime additional amounts of bond money are being expended for which the state cannot even present a claim until the beginning of the following fiscal year. This means that it is sometimes nearly two years after bond money has been expended before the interest can be recovered by the state, while in order to meet the demands when due there must be kept in the treasury a considerable amount of funds unexpended. Another difficulty has arisen due to the fact that a large purchase of field and office equipment was necessary which cannot be pro-rated among the counties until it is learned how much the total expenditure is going to be in each county.

At the close of November, 1912, there had been issued $2,000,000 of the $18,000,000 authorized. An estimate of the probable rate of expenditure of bond fund year by year is given by the highway commissions as follows: Issued to December 1, 1912, $2,000,000; needed during 1913, $4,600,000; 1914, $5,000,000; 1915, $6,000,000; 1916, $1,400,000.

Revenues and Expenditures.

The total receipts to the state treasury for the fiscal year ending June 30, 1912, were $21,445,956.99 and the total disbursements were $18,691,877.28. The receipts however, are not all for state use; certain amounts are merely collected by the state for the benefit of the counties and municipalities to be paid over to them. A second class of receipts which are not available current revenues are trust funds of which the principal may not be expended. A third class of receipts is made up of those funds which are not for general state purposes but are for special uses. A detailed statement showing receipts for the year 1912 is as follows:

I. Taxes:	
1. State corporation taxes:	
Railroads and street railroads	$4,775,750 79
Light, heat and power companies	1,225,419 80
Telephone and telegraph companies	424,697 98
Car companies	89,262 02
Express companies	102,351 07
Insurance companies	521,348 64
Banks	1,628,787 45
Franchises	1,619,588 36
	$10,387,206 66
2. Poll taxes	843,603 69
3. Inheritance taxes	1,083,243 87
4. Corporation licenses	802,012 50
5. Panama-Pacific Exposition tax	1,270,297 01
6. General property tax (delinquencies, etc.)	197,145 77
7. Insurance brokerage tax	3,377 08
II. Fees, fines and licenses	677,498 82
III. Other department collections	715,452 57
IV. Institution receipts	966,634 07
V. San Francisco harbour receipts	1,254,287 32
VI. Sale of state lands	181,743 88
VII. From the United States Government	157,650 38
VIII. From bonds sales, interest and redemption	2,888,100 96
IX. Estates of deceased persons	13,870,000 63
X. Miscellaneous receipts	3,830 88
Total	$21,445,956 99

These receipts are classified as follows to show the amounts available for the general use of the state:

Not for state use	$834,941 87
For state, but not for current expenditures	632,054 94
For state, but for special uses	7,378,094 28
For general uses of State (General Fund, less amount of bond refunds and railroad reimbursement)	12,600,865 90
	$21,445,956 99

As indicating the character of expenditures the following table is given for the fiscal year 1912:

Legislative	$71,301 67
Judicial	454,713 91
Executive	54,255 03
Administrative	645,501 26
Regulative	377,855 42
Defensive	220,176 53
Constructive	1,586,568 99
Educational	8,589,635 55
Developmental	588,040 89
Protective	110,347 11
Benevolent	762,720 90
Curative	1,776,737 01
Corrective	307,851 57
Penal	1,017,902 26
Bonds	1,320,276 87
Lands	11,803 21
Claims	1,976 26
Miscellaneous	12,987 84
Total	$17,910,652 28

A study of the per capita of six states by the State Comptroller of California gives the follow results:

State.	Year.	Total Expenditures.	Per Capita.
New York	1910-1	$69,163,624 28	7.44
Massachusetts	1910-1	14,269,849 61	4.17
Michigan	1910-1	12,596,951 99	4.42
Wisconsin	1911-2	10,581,801 80	4.43
Minnesota	1909-10	13,322,963 17	6.42
California	1911-2	17,197,005 05	6.73
California (after all possible deductions)	1911-2	14,465,905 31	5.66

While New York's total expenditure, as taken from the State Comptroller's report, were more than $69,000,000, a little over $30,000 was spent for canals and highways, leaving the other expenditures about $39,000,000. The figures for Massachusetts include only the "general expenditures," so called, and there is in addition a somewhat complicated system of special fund expenditures. And in the case of each of the other states there is something which makes comparison on an even basis hardly practicable.

The total state and county property taxes for the year 1912 were $35,962,920.48, which would make an average tax rate of $0.0122, the tax rate for the various counties, of course, varying considerably. The state tax rate for 1912 on property was .0044. The total county bonds outstanding June 30, 1912, amounted to $33,858,700 and the district bonds outstanding on the same date $18,993,281.31, a total bond indebtedness of $52,846,981.31, or an average per capita bonded debt of about $22.00 and an average debt per $1,000 of assessed property values of about $55.00.

Highway Construction and Maintenance.

The state highway system contemplated by the $18,000,000 bond issue comprises, first, the construction of two trunk roads, one along the coast and the other traversing the Sacramento and San Joaquin valley; and, second, the construction of such lateral roads as might be necessary to connect the county seats lying east and west of the trunk line. It was found that to comply with the terms of the Act not less than 2,760 miles of road must be included in the system. This would not

allow over $6,500 per mile out of the funds to be made available by the bond issue. The commission, after a careful study of the situation, determined upon the following allotment of the fund:

TRUNK LINES.

1,305 miles, requiring paving, at $8,620	$11,249,246 00
480 miles surfaced with local materials, at $5,944	2,852,905 00

LATERALS.

785 miles at $2,881	$2,261,485 00
Already improved county roads, 190 miles, add 10 per cent. for administration, surveys and engineering	1,636,364 00
Total bond issue	$18,000,000 00

Nearly all of the counties agreed to pay for the bridges on the state highway routes and to furnish rights of way.

The commission has adopted a pavement consisting of concrete base not less than four inches thick and fifteen feet wide with three feet shoulders. The concrete base is covered with asphaltic oil and stone screenings, forming a carpet from three-eights of an inch to one-half of an inch thick. Where traffic is heavy, the thicker base and thicker wearing surface are specified. The maximum gradient in the mountainous country is 7 per cent. The bridges are of reinforced concrete 21 feet wide in the cleat and designed to carry 16-ton traction engines.

The costs of roads which the commission had under contract August 1, 1913, were as follows:

	Miles.	Cost per mile.	Cost per square mile.
Asphalt on concrete base	6.6	$14,920	$1.06
Asphalt on macadam base	11.5	8,403	0.716
Three-eighths inch surface on concrete base	198.1	6,394	0.712
Bituminous macadam	19.1	6,364	0.723
Waterbound macadam	7.6	4,303	0.489

Concrete is laid without expansion joints and it is observed that natural contraction cracks develop about every 30 feet.

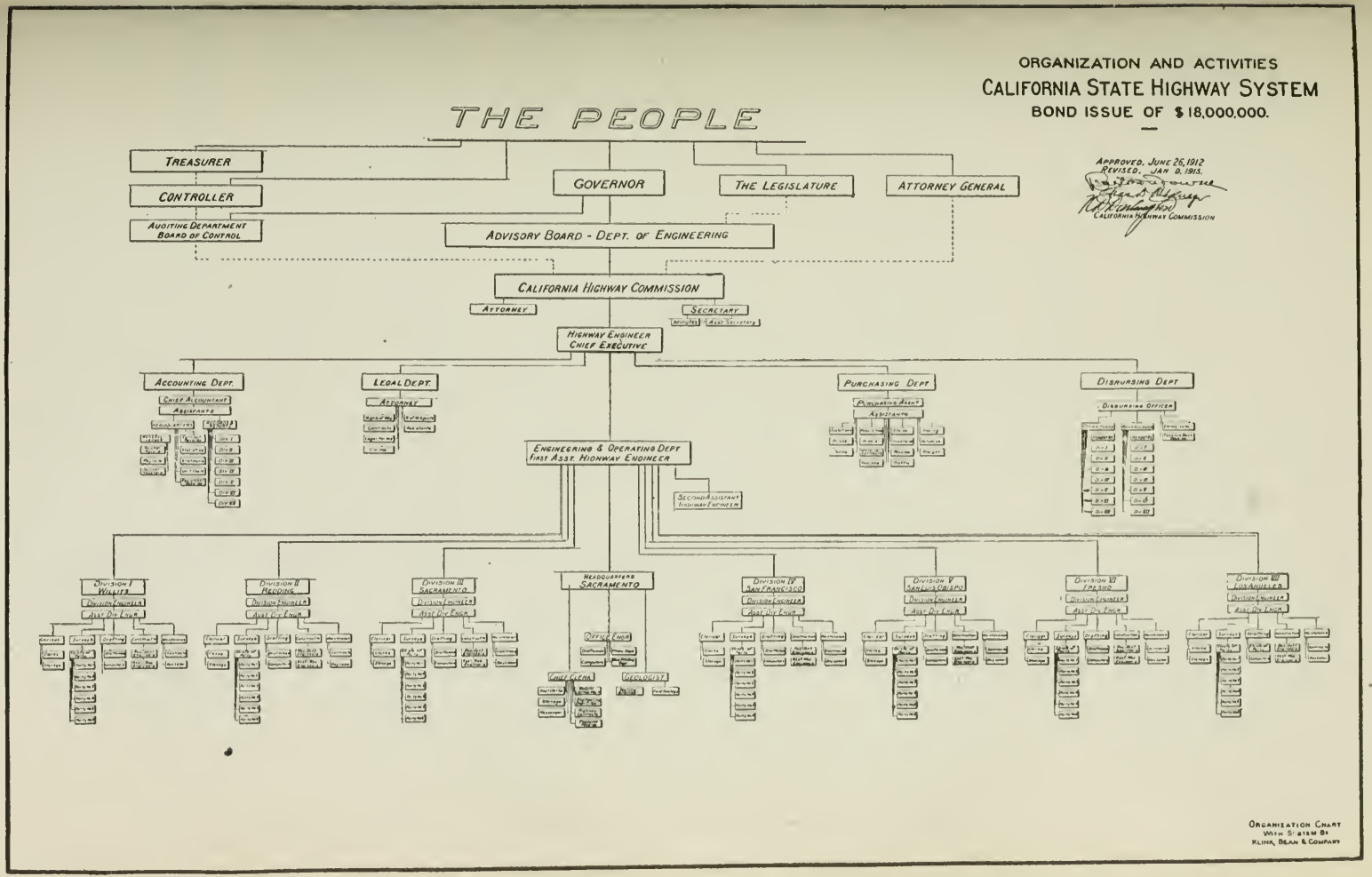
State highways are maintained by the state and no provision is made for sharing the burdens by the counties. To provide maintenance funds an automobile registration law, which became effective January 1, 1914, provides a system of graded fees for registration, which is expected to yield in excess of $1,000,000 for the year 1914. After the expenses of the registering department is deducted half of the remainder goes to the maintenance of state highways and the other half to the maintenance of county roads.

The highway commission reports the total amount of bonds sold to October 1, 1913, at $4,700,000.

Many of the counties have voted large bond issues and have built first-class systems of highways; among them Los Angeles, San Diego and San Joaquin.

Organization of State Highway Department.

By resolution of the state department of engineering a committee of three members known as the "California Highway Commission," was constituted to have full charge of the construction of the state highway system to be built with the state bond issue. The commission has appointed a highway engineer as the executive engineer of the commission, his duties corresponding with that of general manager


ORGANIZATION AND ACTIVITIES
CALIFORNIA STATE HIGHWAY SYSTEM
BOND ISSUE OF $18,000,000.
THE PEOPLE
TREASURER
CONTROLLER
AUDITING DEPARTMENT BOARD OF CONTROL
GOVERNOR
THE LEGISLATURE
ATTORNEY GENERAL
ADVISORY BOARD - DEPT. OF ENGINEERING
APPROVED. JUNE 26, 1912
REVISED. JAN 9, 1915.
CALIFORNIA HIGHWAY COMMISSION
CALIFORNIA HIGHWAY COMMISSION
ATTORNEY
SECRETARY
HIGHWAY ENGINEER CHIEF EXECUTIVE
ACCOUNTING DEPT.
CHIEF ACCOUNTANT
ASSISTANTS
LEGAL DEPT.
ATTORNEY
PURCHASING DEPT
PURCHASING AGENT
ASSISTANTS
DISBURSING DEPT
DISBURSING OFFICER
ENGINEERING & OPERATING DEPT
FIRST ASST. HIGHWAY ENGINEER
SECOND ASSISTANT HIGHWAY ENGINEER
DIVISION I WILLITS
DIVISION II REDDING
DIVISION III SACRAMENTO
HEADQUARTERS SACRAMENTO
DIVISION IV SAN FRANCISCO
DIVISION V SAN LUIS OBISPO
DIVISION VI FRESNO
DIVISION VII LOS ANGELES
ORGANIZATION CHART
WITH STATEMENT OF
KLINK, BEAN & COMPANY

of a large private corporation. Under the highway engineer are the following divisions: engineering department, under the supervision of the assistant highway engineer. This department is further divided into eight subdivisions, each in charge of a division engineer and which represents the work in different parts of the state. A purchasing department, reporting directly to the highway engineer; accounting department, reporting directly to the highway engineer; financing and disbursing department reporting directly to the highway engineer; legal department, reporting directly to the highway engineer, and handling all legal matters in connection with rights of way, condemnation suits, etc.

IX. OTHER STATES OF THE AMERICAN UNION.

ALABAMA.

The State Highway Commission is appointed for four years, consisting of the Professor of Civil Engineering in the State University, State Geologist and three civilians appointed by the Governor. The Commission makes an annual report, recommending legislation. It also formulates a definite policy and may, with regard to this, refuse State aid for the construction of bridges.

The State Highway Engineer elected by the Commission is bonded at $5,000 with a maximum salary of $4,000. His duties are:—

(1) To be the executive of the Commission.

(2) To be the consultant to the Counties.

(3) To supervise and approve the State Highway System. The Staff consists of an Assistant State Highway Engineer, clerk, 9 resident engineers and 10 County resident engineers.

Local administration is in the hands of the County Commissioners who have their County Engineer. County forces may be used in construction, but where the cost of improvement exceeds $3,000 for State aid, the State Highway Engineer may advertise for bids, the contractor being bonded double the amount of his contract.

The State contributes for State Aid Highways an amount equal to that contributed by the County which must purchase rights of way if necessary. All such roads are free of toll. Specifications for such roads must be approved by the State Highway Engineer and the aid is withheld until the work is well under way and $1,000 has been spent by the County. State aid must be expended on permanent improvements on main-travelled roads, one continuous stretch to be finished each year. Surplus amounts may remain in the State Treasury to the credit of a County for not longer than two years, reverting at the end of that time to the common fund.

The State Highway revenue is derived from the Convict Fund supplemented by a special tax. Counties may issue bonds to the extent of 3½ per cent. of their taxable property.

COLORADO.

The State highway authority is the Highway Commissioner appointed by the Governor for four years with a salary of $3,000; he is assisted by an advisory board of five members appointed by the Governor, one retiring each year. These members represent the districts in which they reside and are allowed only actual expenses. The duty of the Commissioner and his advisory board (whose unanimous consent and approval is necessary, the Governor, however, having power to approve or reject a majority agreement) is (1) To make appropriations for road and bridge work among the counties; (2) To give advice, assistance and supervision with regard to construction, improvement and maintenance of roads throughout the State; (3) To ascertain the location and nature of road material, to make rules and regulations and to present reports to the Governor. The Secretary of the Commission is a competent Engineer with a maximum salary of $2,100. The local authority is in the hands of the various boards of county commissinners whose first duty it was, upon the appointment of the State Highway Commission, to prepare road maps of the respective counties, designating thereon a system of main or market roads and giving a statement as to the location and nature of road materials in their counties. In default of this duty, maps were to be prepared by the State Highway Commission, the expense being deducted from the first apportionment due the defaulting county. The State Highway Commission thereupon prepared a map designating the roads for which State aid was deemed expedient, not only for construction but for improvement and maintenance; according to the legislation, these roads must "provide an adequate system of State roads to the various market and business centres of the State, and connect such centres with each other." The State Commission might then divide such roads into those of primary and secondary importance, the former being constructed or improved before the latter. The next duty of the Board of County Commissioners is to make provision for the survey of such roads with the preparation of plans and specifications and a submission of estimates for the final approval of the State Highway Commissioner and his advisory board: in every case the Boards have to comply with the rules and regulations of the Commissioner. The Boards of County Commissioners have directory charge over all construction, improvement and maintenance on State roads in the several counties, with joint provision by counties for State roads which are inter-county boundary lines. The county authorities may also employ Engineers and with the authority of the State Highway Commission, let contracts to the lowest bidder, this being compulsory when the estimate is over $2,000, the contractor being bound by an amount equal to half the contract price. The Board makes an annual report to the State authorities. By the Act of 1911, authorization was given for the formation of road maintenance districts under the supervision of County Commissioners and road overseers, with a Superintendent of roads and bridges for the whole county. A petition of 35 per cent. of the electors in a county guarantees the hearing by the Board of County Commissioners consequent upon which the County may be divided into road maintenance districts. A special road tax of $3.00 or its equivalent in labour is due from every able-bodied male from 21 to 50 years of age in such road districts. Public improvement districts may also be established in counties, cities or towns, with authority given to the municipality to issue bonds bearing 6 per cent. interest for fifteen years, to be met by special levy upon the lots of land within the improvement district.

The State road fund consists of an annual appropriation of $15,000, together with an equal amount to cover the current expenses of the State Highway Commission. Other appropriations may be made from time to time. There are no bond issues in the State, the only source of revenue at the present time being the percentage derived from the sale of public lands of which 5 per cent. is devoted to internal improvement. One-half of the revenue from automobile fines and licenses—motor vehicles up to

20 horse power	$2 50
21 to 39 horse power	5 00
41 horse power and over	10 00
Motor cycles	2 00
Chauffeur's license	1 00
Manufacturers and dealers, for every five certificates	5 00

goes to the State, and half to the counties. The question of either a direct levy of ½ mill per year or a bond issue is now in consideration. Of this State Road Fund apportionment is made to counties on the basis of population, area, amount of money expended on road construction, the difficulty and expense of construction and the extra expense connected with the development of new country. In default of notice within thirty days from the County Commissioners as to the amount proposed for expenditure, the State Highway Commissioner may expend this apportionment among other counties complying with the regulations. No money is to be expended within the corporate limits of a city or town. With few exceptions 75 per cent. of the money at the disposal of the State Highway Commission for distribution must be used for the counties which have provided an amount equal to the aportionment; this apportionment is, however, not available until the county has set aside its own funds. The remaining 25 per cent. may be expended as the State Highway Commission sees fit. The general county fund may have warrants drawn against it to the extent of 80 per cent. of the total amount of taxes levied. Counties may also issue coupon bonds, the interest being met by an annual levy. Convict labour from the State Pentitentiary is granted to the counties upon the written request of a majority of the Board of County Commissioners. It is to be noticed in the way of division of cost and labour that electric railroads are expected to maintain and keep joint road and bridges in good repair, the railroad paying one-half the expense of construction and maintenance of new bridges, in default of which it must forfeit its franchise and right of way. The only direct county taxes are those derived from the poll tax in road districts and the abutting property tax in improvement districts, as mentioned above. Wide tire legislation has been recommended but is not yet adopted.

CONNECTICUT.

The head of the State highway organization is the State Highway Commissioner appointed for two years with a salary of $10,000 during this period. His Deputy has charge of all new construction and financial and general management, with eight Division Engineers in charge of the field work in approximately equal districts. There is also a Superintendent of repairs and assistant, under whom are nine supervisors of repairs controlling the patrol work on the main trunk roads and repair work in general in their respective divisions. There is also an inside staff consisting of the chief clerk, draughtsman, etc., to attend to the drawing up of specifications under the direction of the State Highway Commissioner.

The revenue for State highway construction is derived from authorized bond issues, two-thirds of the appropriation of which, during the years 1913 to 1915 is being applied to the construction and maintenance of the trunk line system of which the State pays the entire cost. The revenue from automobile registration and fines is used for the maintenance of these trunk line highways.

Apart altogether from this main trunk line system, there is the system of State aid roads, which are main highways running from town to town, not included in the above mentioned plan. Seven-eighths of the costs of improvement of these roads (from ¾ to ⅞ according to assessment) is contributed to the towns by the State. Upon the application of the towns, State aid is given. It is to be noted that the town municipalities and not counties, are used as the local basis.

DELAWARE.

The highway system of New Castle County is under the New Castle County State Highway Commissioner appointed by the Governor for four years and bonded at $2,000, and his assistant, each with a salary of $1,000. The duty of the Commissioner is to investigate, prepare plans and specifications, certify to the State Treasurer and the Levy Court of New Castle County, the itemized expenditure and to submit a biennial report to the General Assembly. The initiative for State aid is taken by the Levy Court whose resolutions may be approved by the Commissioner, whereupon the latter prepares the plans. Half the cost of construction of such highways is to be paid by the State; the other half is contributed by the Levy Court, which may borrow money on temporary loans. All such roads except those within the limits of municipalities are County roads and must be repaired by the Levy Court.

In this last connection, the court appoints a County supervisor bonded at $1,000 whose duty it is to supervise repairs. Cities do their own repairing. The tax rate of New Castle County for highways averages four mills on the dollar and was so recommended by the County Commissioner in his 1913 report. There is a bonus for wide tires consisting of a rebate per year of $1.00 per wheel of not less than 4 inches wide, from the road tax of any individual, up to three-quarters of such a road tax. Provision is made in the case of contractors for bonds or checks amounting to $500 to accompany each tender while 5 per cent. of the contract price is to be retained for a year. The supervisor appointed by the Commissioner supervises all work done under contract.

IOWA.

The State Highway Commission (created in 1913) consists of the Dean of Engineering in the State College and two other members appointed for four years, by the Governor from different political parties, all three being compensated at $10 per diem up to $1,000 a year. The duty of this Commission includes (1) Having a directory charge over the entire system of roads; (2) Acting in an advisory capacity to County Boards and County Engineers; furnishing them with standard plans; (3) Investigating County conditions and disseminating highway information; (4) Keeping records and making annual report to the Governor.

The local authority in each County is the Board of supervisors, whose duty it is to employ a competent Engineer or Engineers bonded at $1,000 to $5,000. The Board is bound to designate from the highway within the County, not less than

10 per cent., and not more than 15 per cent. of the total mileage, for the purpose of establishing a County road system. This system is to consist of "the main travelled roads in the County, which must connect the principal market places of the County as well as connect with the County roads in adjoining counties." Such a system is not to include roads within the corporate limits of cities and towns. Having designated these roads, the Board of supervisors is required to furnish the State Highway Commission with County road maps which are open for inspection, consequent upon which public hearings of freeholders are held and petitions may be made asking for a change in the proposed system. The maps being approved by the Commission or the latter having designated a system upon failure of the Board of Supervisors to do the same, the County Engineer makes his survey, reports to the Board of Supervisors who await the final approval of the Commission. In the matter of bridges and culverts throughout the County, these are to be constructed and maintained by the Board of Supervisors, but only when public necessity demands, may the Board construct or maintain bridges within towns or cities.

All roads outside cities and towns and not included in the County road system, form township road systems. When all the County roads have been improved, the Board of Supervisors may transfer roads from the township system to the county system. The township authority is the Board of township trustees who determine every February, the roads to be dragged, appointing for this purpose a Superintendent. The County has also its own dragging system under the direction of the Engineer.

There is no State aid but automobile fees are at the disposal of the local authorities. The County funds may be expended for tools, machinery, improvement of the County road system and building of culverts having a span of 4 feet or less and are as follows:—

(1) A tax of one mill on all property including city property. Any portion of this fund rising from property within any municipality is expended on County roads within and without the limits, half of the amount being paid to the City Treasurer who must spend it on main roads within. The other half is paid to the County to be spent on roads without, but immediately contributory to the municipality.

(2) The County drainage fund, that is, a tax of one mill on the assessed valuation of the County, including property in cities and towns other than those of the first class.

(3) The County motor vehicle road fund consisting of an equitable distribution of 85 per cent. of the State license tax.

(4) The County road building fund, that is, two mills on all property outside corporations.

(5) The permanent road district fund which is an exceptional levy of not more than two mills on County property, half the expense to be assessed against abutting property.

(6) Convict labour from the State Penitentiary.

(7) Bonds (refunding) to take up outstanding floating indebtedness in excess of $5,000, with special levy for same. This may be issued on a two-thirds vote of the Board of Supervisors.

(8) The County bridge fund, that is, a levy of not more than five mills on property outside cities of the first class, to be expended on the construction and repair of bridges and culverts anywhere except within such cities.

The township funds are to be expended by the township trustees on the township road system and are as follows:—

(1) Road fund of four mills (maximum).
(2) Township drainage fund of five mills (maximum).
(3) Township dragging fund of one mill (minimum).
(4) Statute labour for two days or its equivalent in cash.
(5) Labour of the poor at $.05 per hour.

KANSAS.

The present State organization consists of a State Engineer, drainage and irrigation engineer and three assistants: salary of the State Engineer being at the present time $2,500. Recommendations are being made to the Legislature involving a change in the constitution whereby the State may be authorized to do internal improvement work. While the State makes no direct appropriation for road and bridge work at the present time, a small appropriation is available for the expansion department for roads, bridges, drainage and irrigation work. All the funds for road and bridge work are raised by direct taxation. The automobile tax (assessed under personal property and subject to an additional tax of $5.00 per automobile and $2.00 per motor cycle) is collected by the County Treasurers, 15 per cent. only being returned to the State for clerical expenses.

Owing to the majority of roads being earth, the maintenance of these lies with the owners of adjoining property with whom the county or township makes a contract for the dragging of the roads at from 50c. to 75c. per mile. The farmer then makes his report to the County Engineer by post card. It is to be noted that according to the State Law roads are classified according to their relative importance as (1) State roads (which are designated by the Legislature) (2) County roads (which conect cities and market centres and are as nearly as possible continuous from one county to the next: these are designated by the three county commissioners) (3) Mail routes; (4) Township roads (including all other public highways). The State and County roads are constructed and maintained at County expense under the direction of the three County Commissioners and the County engineer. The township roads are constructed and maintained under the direction of the three Township Highway Commissioners and the County engineer. A recommendation is being made at the present time to combine the counties into districts with a district engineer in charge and to vest the authority and office of the county surveyor and county engineer in the same person.

There is no wide tire legislation.

NEW HAMPSHIRE.

The head of the Road Department is the Superintendent of Highways, appointed by the Governor-in-Council for a term of one year with right to appoint his own employees. The State is divided into nine divisions, each being in charge of a Division Engineer responsible to the Department and having control over both maintenance and construction. The trunk line roads are laid out by the Legislature and extend north and south throughout the State which pays, generally speaking, three-quarters of the cost of improvement. The State Aid Highways

on the other hand, are selected by the various town authorities, largely for local purposes, the general supervision of the Department being given as in the case of trunk lines.

In addition to the annual appropriation made by the Legislature and the automobile fees (available for maintennce but not for construction. 65 per cent. going towards maintenance of trunk line roads, and 35 per cent. towards other State Aid Roads) the State Highway revenue may be derived from bond issues bearing interest at 3½ per cent. for 13 years. In order to obtain State aid, towns must set aside an amount varying from one mill on the dollar on a valuation of less than $2.000,000 to ¼ mill on valuation of $15,000,000 or more. If a town desires State aid for permanent improvement in addition to that provided for as above, it must raise an additional amount equal to 50 per cent. of this sum. On application for State aid, towns receive from $3.00 to 20c. for each dollar set aside according as valuation varies from $100,000 to $3,000,000 or upwards. A joint fund is thus set aside for permanent improvement.

The following is the list of registration fees for motor vehicles:—

Motor cycle	$3 00
Commercial motor truck	10 00
Automobile, up to 15 H.P.	10 00
Automobile, 16 to 30 H.P.	15 00
Automobile, 31 to 40 H.P.	20 00
Automobile, 41 to 50 H.P.	25 00
Automobile, 51 to 60 H.P.	30 00
Automobile, 61 H.P. and over	40 00
Substitution of registration	2 00
Registration by non-resident	half the usual fees.
Neutral zone registration	2 00
Registration by manufacturers and dealers	40 00
together with half the usual fees rated by horse power.	
Operator's examination and license	3 00
Chauffeur's examination and license	5 00
Subsequent license	1 00
Special non-resident certificate and examination	2 00
Subsequent certificates	1 00
Additional copies	50
Additional plates	1 00

There is no wide tire legislation.

MONTANA.

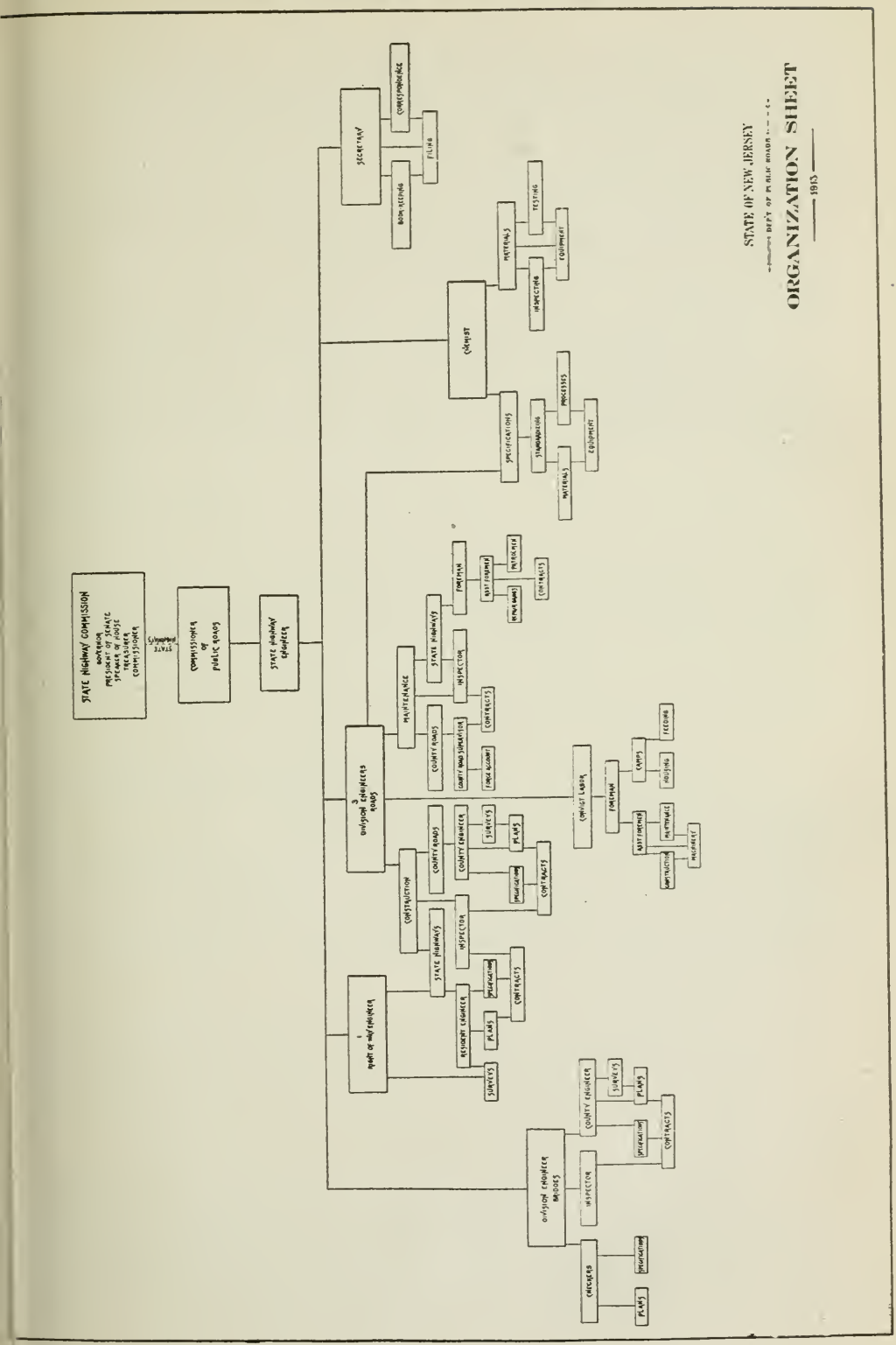
The State Highway Commission (created in 1913) consists of two ex-officio members, namely, the Professor of Civil Engineering in the State College of Ariculture and Mechanic Arts, and State Engineer, who are allowed $10 per diem, and a Civil Engineer appointed by the Governor, to act as Secretary with a salary of $3,500 per annum. The first duty of the Commission was to prepare a map designating a State system of highways leading to the various market and business centres of the State and connecting the same, this system being based upon the County road maps received from the Boards of County Commissioners. The State highway fund appropriated out of the general fund of the State, is apportioned among the Counties by the State Highway Commission with the following taken into consideration:—

(1) Area of County.

(2) Money expended on road construction.

(3) Difficulty and expenses of road construction.

(4) The extraordinary expenses connected with the development of new country.


STATE HIGHWAY COMMISSION
PRESIDENT OF STATE
SPEAKER OF HOUSE
TREASURER
COMMISSIONER
STATE HIGHWAY ENGINEER
COMMISSIONER OF PUBLIC ROADS
DIVISION ENGINEERS ROADS
CHIEF OF MAINTENANCE
DIVISION ENGINEER BRIDGES
SECRETARY
CORRESPONDENCE
BOOK KEEPING
FILING
CHEMIST
MATERIALS
TESTING
INSPECTION
EQUIPMENT
SPECIFICATIONS
STANDARDIZING
PROCESSES
MATERIALS
EQUIPMENT
MAINTENANCE
COUNTY ROADS
STATE HIGHWAYS
INSPECTION
CONTRACTS
FORCE ACCOUNT
COUNTY ROAD SUPERVISION
ASSISTANTS
FOREMAN
MECHANICS
CONSTRUCTION
COUNTY ENGINEER
SURVEYS
PLANS
INSPECTION
CONTRACTS
RESIDENT ENGINEER
CONVICT LABOR
CAMPS
FEEDING
HOUSING
STATE OF NEW JERSEY
DEPT. OF PUBLIC ROADS
ORGANIZATION SHEET
1913

The State may also be bonded up to $100,000. The condition upon which the full appropriation is granted is that the County shall raise by tax an equal amount, but none of this fund can be spent within the corporate limits of cities or towns. The duties of the State Highway Commission are:—

(1) To prepare rules and regulations for improvement, construction and maintenance of these State highways.

(2) To approve at their discretion the various specifications and preliminary assessments of the Board of County Commissioners.

(3) To receive the reports of these Boards and to make a detailed report to the Governor.

All public highways are divided into (1) State Highways (mentioned above); (2) Secondary Highways; (3) Common Highways. State Highways are those designated by the State Highway Commission to receive State aid, both for construction and maintenance. State Highways may be abandoned on the joint order of the Board of County Commissioners and the State Highway Commission.

The local authority is in the hands of the Board of County Commissioners whose duties are as follows:—

(1) To direct all road construction within the County, letting contracts for the same and bonding the contractor to the amount of one-half the contract price (20 per cent. being withheld until the work is completed and accepted).

(2) To keep the County divided into road districts with supervisors.

(3) To survey highways and order the maintenance of bridges, abolishing when unnecessary, and reporting to the State Highway Commission.

(4) To issue County bonds, employ road builders and purchase machinery.

(5) To prepare plans, specifications and preliminary assessments for work on State highways according to the rules and regulations of the State Highway Commission, reporting to the latter for final approval.

On the petition of ten or a majority of freeholders in the road district, the Board may establish, change or discontinue common highways, if the report of the Board of Viewers is favorable. The District Road Supervisors, bonded by this Board, have charge of the highways and bridges within their districts and make quarterly reports to the County Commissioners.

The County road fund is derived from the following sources:—

(1) A rate of two to five mills levied by the Board of County Commissioners.

(2) A general road tax of $2.00 a head for all males between 21 and 50 years of age.

(3) A special bridge tax up to two mills.

(4) State and secondary highway bonds up to 5 per cent. of taxable property.

These funds are apportioned quarterly to the road districts. The net proceeds of the motor vehicle tax ($2.00 per vehicle, $10 for each type or style payable by manufacturers and dealers and $2.00 for the registration of chauffeurs) constitute a separate fund for the improvement, maintenance and repair of State highways.

NORTH DAKOTA.

The Highway Commission (created in 1913) consists of the Governor, the State Engineer and one other member appointed by the Governor. Their duty is to furnish plans and specifications and to superintend, without compensation, the construction of any roads upon request of the County boards. The State Engineer prepares plans and specifications for bridges and culverts upon request of the local authorities.

The County system was revised in 1911 in order that the old system of County Road Superintendents and Township Overseers might be superseded by County Superintendents of Highways having complete charge and supervision of construction, improvement and maintenance of the roads, upon their appointment to this position by the County Commissioners. These County Commissioners act in their respective counties as highway boards and may create in unorganized territory road districts with overseers. When a County has organized townships, an overseer is appointed by the township board; if there is no County Superintendent of Highways he has complete control of the township work, but if there is a Superintendent, he is, ex-officio, his deputy.

Highway maintenance funds are derived from motor license fees ($3.00 per year, the net revenue of which is returned to the County) a poll tax of $1.50 on males between 21 and 50 and a property tax of from one to five mills on the dollar for the County. The township may levy a maximum highway tax of eight mills on the dollar. This township road tax may be paid in labour. Bridge bonds may be issued by the County for half the amount of cost, the other half being provided by the municipality. Such bonds bear a maximum interest of 7 per cent. and mature in twenty years.

OREGON.

The State Highway Commission (created in 1913) consists of the Governor, the Secretary of State and the State Treasurer and has "general supervision over all matters pertaining to the construction of roads, letting contracts therefor, and the selection of material used in the construction of roads" improved with State aid. The Commission appoints a State Highway Engineer with a salary of $3,000 and bonded at $10,000. His duties are (1) to compile statistics and investigate methods of construction; (2) to advise County Courts and furnish requisitions to the latter upon request; (3) to prepare a system of State Trunk Highways, reporting same to the Commission for their adoption; (4) to present monthly progress and annual reports; (5) to construct State roads. These State roads "shall in every case, lead into or towards the chief market centre of the State, and shall connect with, so far as possible, the principal County roads of the State." The State road fund consists of a special State tax upon the counties of one-quarter of a mill: the State may be bonded up to $50,000 (including previous debts or liabilities) for ordinary purposes, but in the case of permanent roads, the bond may amount to 2 per cent. of the assessed valuation of property in the State.

Local administration is in the hands of the County Court and a paid County Road Master who has supervision over all County work, there being several methods by which County roads may be improved: (1) By resolution of the County Court, or (2) by petition to the Court from at least twelve freeholders of a road district, authorization may be given to the Board of County Road Viewers (consisting of the County Surveyor, the County Road Master and one other) to locate the road and

report to the County Court who may call for sealed bids, with bond double the amount of the bid; (3) instead of improvement by County or road district (over each of which is a yearly appointed supervisor) counties with over 150,000 inhabitants may organize one or more road assessment districts along any County road, not more than one mile wide. In this case the cost is to be defrayed by a special assessment of land within the district on the report of three sworn appraisors as to benefits resulting to each lot. Forty per cent. of the cost of improvement is the minimum charge against such property, for which indebtedness, non-taxable certificates bearing interest at 6 per cent. for ten years may be executed by the County Treasurer and issued on the holder of abutting land to any person in lieu of payment for road services or material. Such bonds may be given in part payment to the contractor, who is in no case discharged from his contract until 90 days after the completion of the work. Hearings are heard in the Courts on the appeal of property owners as to the relation between taxation and benefits.

Counties may be bonded up to $5,000 or in the case of permanent roads up to 2 per cent. of the assessed valuation. The other sources of highway funds are (1) a cash tax of not more than 10 mills on all taxable property in the County (half of which revenue is to be apportioned to road districts according to the amount of taxable property in each); (2) an additional tax in any road district by majority vote, this constituting the district road fund; (3) a special road fund derived from a special tax on road districts of 10 mills on the dollar on the equalized assessment of the district in question.

Convict labour is under the control of the County Court and all prisoners, whether under sentence or committed in default of a fine, may be called upon to work on the roads. The net proceeds of automobile registration are returned to the Counties in proportion to the number of licenses granted in each County, the following being a graded list of fees:—

Transfer of sale fee	$1 00
Registration of chauffeur	2 00
Motorcycles and motor bicycles	3 00
Electric vehicles for pleasure	3 00
Electric service vehicles	5 00
Steam, gasoline and other hydrocarbon operated vehicles for whatever use up to twenty-six (26) horse-power	3 00
In excess of twenty-six horse-power and inclusive of thirty-six horse-power	5 00
In excess of thirty-six horse-power and inclusive of forty horse-power	7 50
In excess of forty horse-power	10 00

VERMONT.

The State Highway Commissioner is appointed for two years by the Governor, with a salary of $3,000 and a small office staff. His duties are (1) to control and direct the expenditure of all moneys appropriated by the State or apportioned to towns and incorporated villages for highway improvement; (2) to make and issue regulations to the Town Road Commissioners together with plans and specifications; (3) to control the expenditure of special appropriations made by the Legislature. This State highway revenue is expended on the permanent improvement of the main thoroughfares and most important roads in each town selected by the selectmen and town road commissioners, subject to the approval of the State Highway Commissioner. The general policy is to designate "trunk lines of improved highways from town to town and to the most important local railroad stations." It is

to be noted that the town and not the county is the local unit of highway administration. It is the town which selects the State roads, keeps them in good repair and receives the amount re-apportioned by the State. This is derived from a State highway tax of $0.05 on the dollar annually assessed upon the grand list of towns, etc., for the support of highways. The tax so raised is re-apportioned and repaid to the towns and villages on a basis of road mileage ascertained by the selectmen. The direct appropriation is also available for cities and towns which vote an amount over that required by law; in such a case the State contributes an amount equal to the excess, provided it is not less than $100 or more than $1,000 in any one year.

The recent legislation tends to centralize highway authority in the hands of the State and provides for its redistribution on a new basis among the counties. Thus, the Highway Commissioner, with the advice and consent of the Governor, appoints annually supervisors for each county. These supervisors are his agents and not those of the county.

There are no bond issues. A maintenance fund exists, consisting of the net proceeds of automobile registration fees which are expended under the supervision and direction of the State Highway Commissioner in the several counties of the State. The annual registration of an automobile or motor vehicle which has not been registered in any previous year, is $1.00 per horse-power. The second registration fee is .75c. per horse-power and the third is .50c. The horse-power is determined by the formula of the Association of Licensed Automobile Manufacturers. Wide tire regulations insist upon 3 inch for vehicles and loads from two to three tons, 4 inch for from three to six tons and 6 inch for over 6 tons.

WASHINGTON.

The State Highway Department consists of the State Highway Commissioner (appointed by the Governor for four years with a salary of $5,000 and a bond of $10,000), and a State Highway Board composed of the Governor, the State Auditor, the State Treasurer and a member of the Railroad Commission of Washington. The Highway Commissioner may appoint an assistant acting as chief clerk. The duty of the Commissioner is to keep a record of all highway proceedings, specifications and estimates, to submit a report before every session of the Legislature making recommendations and giving estimates, to compile highway statistics, to act in a consultant capacity to County highway officials on questions of construction, repair, altering and maintenance and generally to co-operate with the County authorities, furnishing them with plans and directions for the improvement of the public highways and bridges: he is also authorized to acquire by gift, purchase or condemnation right-of-way for State roads. The duty of the Highway Board is to decide what portion of the amount appropriated for any state road shall be expended within the boundaries of the several counties through which it is proposed to pass and at the discretion of its members to build any State road either by contract or force account, purchasing machinery for the same. When the work is done by force account, convict labour is extensively employed. All convict work on State roads is under the direction and supervision of the State Highway Commissioner. For the creation of a fund known as the public highway fund, the State levies a tax of 1¼ mills on State property, 5 per cent. of which revenue is set aside exclusively for the repair and maintenance of state roads under the direction of the Highway Commissioner. It is to be noted that highways within the state are divided into state roads (primary and secondary) and permanent highways. Primary highways, when constructed,

are maintained at the expense of the public highway fund; secondary highways at the expense of the counties in which they are located. If the latter cannot be maintained in this way, they are abandoned. In addition to these public highways, however, there are the county and township roads. The local authority is in the hands of the Board of County Commissioners whose duty it is to lay out, alter or dis-continue county roads with supervision over all county highways except those the jurisdiction over which is vested in corporate municipalities; to license and fix the rates of ferriage; to fix the amount of county rates and to collect the same; and to divide when necessary the county into road districts conformable with the nearest school districts (which are apportioned among the commissioners with a resident road supervisor having charge of the public roads in each). The county surveyor, elected for two years and bonded at $2,500, prepares maps, inspects bridges and makes his report to the Board of County Commissioners. The procedure by which county roads are laid out is by resolution of the Board of County Commissioners or by petition from bonded householders, followed by a preliminary examination and report of the county engineer; warrants to cover condemnation and damages are drawn upon the general road and bridge fund of the county. Bridge construction or improvement, if costing more than $200 must be effected under contract with the contractor bonded at 10 per cent. of his bid. Compensation by railway companies for franchise over bridges goes to the State highway fund.

The county road funds consist of a road tax of 5 mills, a contribution of not more than 4 mills to the general road and bridge fund and not more than 10 mills in each road district (road district tax). There is also a bridge tax of 3 mills. Back taxes are paid into the special indebtedness fund while outstanding warrants against any highway fund are met by levies of 6 mills. (It is to be noted in this connection that there is also a state tax limited by the amount levied by the State Board of Equalization, a county indebtedness tax of 5 mills, a county current expense tax of 8 mills and a school tax of from 8 to 10 mills). In general no expenditure is allowed beyond 80 per cent. of the amount levied for funds. Road taxes received from municipal corporations are returned to the same for expenditure on streets. Township funds consists of a road and bridge tax not to exceed 8 mills except in the case of a special levy; 25 per cent. of the county levy is also set aside for construction and repair of such roads and bridges. In 1913, however, there were only two counties in the State with organized townships. County road bonds with a maximum interest of 6 per cent. and payable at a time fixed by the Board of County Commissioners can be issued for county roads and bridges and for State roads, the proceeds to be expended under the general direction of this Board. not more than 40 per cent. of which can be spent within any city or town; there is an annual levy to pay the interest and a special sinking fund inaugurated at least five years prior to the maturity of the bond.

Permanent highways (previously known as State Aid Roads) have the three following characteristics:

(1) The road must start from a trade centre, ("an improved public road constructed along a main line of travel, either beginning at some trade centre, or an extension of an existing road of like character beginning at some trade centre").

(2) Contracts may not be let for less than one mile.

(3) The road must be finished with hard surface.

Upon petition of owners of two-thirds the lineal feet of land fronting upon any public highway or section to the Commissioners (or by petition from the township board of supervisors) a resolution of the County Commissioners endorsing the plan is forwarded to the State Highway Commissioner who investigates and improves the same, engineering work to be done by the County Engineer under the direction of the County Commissioners. Of the contract price 20 per cent. is retained until the work is accepted. The cost of improvement comes out of the general road and bridge fund of the county to which is added a tax of 15 per cent. against the abutting property; this last provision is effected by constituting improvement districts between 660 ft. and three miles in width running along the stretch of road and divided equally as to width into three sub-divisions bearing respectively 7, 5 and 3 per cent. of the cost, the basis of estimate being the accruing benefits. A state tax of 1½ mills is levied on all property in the State (permanent highway fund) the amount paid by individual counties being credited to the same. On the analogy of the public highway fund tax, mentioned above, 5 per cent. of this fund is used for the repairing and maintenance of permanent highways, and appropriations may be made from the public highway fund to the permanent highway fund. It is noteworthy that no railway or street railway company may construct its lines on permanent highways although such highways may be continued through towns of the fourth class.

Altogether apart from the above procedures there are three other means of highway improvement in vogue. (1) By the "Improved Roads System," under the direction of the County Commissioners, work may be done on roads starting from a city or trade centre or connecting with a railway or shipping station, the costs to "be apportioned as near as may be possible to the corporations, companies, persons and property benefited thereby." Upon petition of two or more persons owning property representing at least $10,000 a mile of the proposed improvement and at least $5,000 a mile within the improvement boundary (the petitioners being bonded) a survey may be made by the County surveyor and assessment of benefits and damages stated by three appraisors resident in the county but not in the territory in question. According to this plan, benefits are assessed against each corporation and individual interest, while the total cost of improvement is divided in the following manner: the County to pay one-third, the road district to pay not more than one-third, the property in incorporated towns and cities within 10 miles to pay not more than one-sixth while the property within the improvement boundary is to pay not more than one-third. The improvement cost is paid in the first instance from the general road fund of the county or by bonds bearing interest at 6 per cent. for a maximum period of twenty years (with the usual annual levy and sinking fund at the expiration of 10 years). It should be noted that public lands belonging to the State, County, School and school district are liable to assessment under this system.

(2) The second plan is the "Local Improvement plan" by means of which the route, methods of drainage or type of construction of existing county roads may be changed according to the decision of the County Commissioners or upon petition of owners of property fronting on two-thirds of the lineal feet of the proposed improvement. For this purpose the land in question is divided into assessment zones with three sub-divisions, the first bearing 15 per cent. of all expenses, the second 35 per cent. and the third 20 per cent., the sub-division being equal in width as in the case of the "Improved Roads System." The usual procedure is followed with regard to surveys, reports and contracts. The County Engineer and a com-

mittee of supervisors apportion the costs among the sub-divisions according to benefits, payment being made (1) within 30 days with 10 per cent. interest per annum, in default of which land may be confiscated; (2) or by warrants of payment in annual installments, which may be issued to the contractor in partial payment for his work; (3) "Arterial Street Improvement" by means of which roads without a town or city but immediately contributory to it and connecting with a public highway of not less than two miles in length, may be improved by resolution of the municipality, assessment being made according to local improvement district.

Wide tire regulations exist limiting loads (including the weight of vehicles) as follows:

Width of Tire.	Weight allowed per inch.
2—5 in.	400 lbs.—50 lbs. in excess of 2 in.
5 in.	550 lbs.
Over 5 in.	550 lbs.—70 lbs. in excess of 5 in.

If diameter of wheel exceeds 3 ft., an additional weight of 50 lbs. per inch on width of tire may be carried for each foot in excess of three feet.

The State quarries are self-supporting, there being no fund available for their operation other than the rotary fund which is credited with all sales of rock from the five quarries.

At the present time the automobile license is $2.00 for each machine, the receipts going into the general fund. In his fourth biennial report, 1912, the State Highway Commissioner recommended an annual tax of 25c. per horse-power, while it is stated that there is considerable advocacy of an average fee of $15.00 per automobile, the funds to be devoted to the maintenance of the trunk highways.

WYOMING

The State official is the State Engineer who makes locations and surveys for Counties at the cost of the latter. The only money spent by the State is by direct appropriation of the legislature. All other revenue for road construction is provided by the Counties to which the automobile fee (5 less $1 for cost of issuance) is turned over.

There are no wide tire regulations.

APPENDIX No. 10

An Historical Sketch of Road Development in Ontario[1]

The history of the Ontario road, whether interurban or purely local, is intimately connected with the growth and expansion of municipal government. Whatever the future has in store for it, the local administrative unit has already played an important part, in conjunction with the military and civil authorty, in the development of the country. In the second place, even the most casual survey of the past will show that highway engineering requires at least as much expenditure as any other system of public works—a fact that was realized with difficulty in the last century. With these two questions kept in the foreground, the history of highway organization and finance assumes practical importance. An attempt has been made in this sketch to point out some of the more important phases in the history of road development in Ontario (2), chiefly in the days when the settlement of the older parts of the province had not been completed, together with a preliminary statement of highway conditions in Canada under the French regime.

Since the establishment in 1689 of the French road system under the supervision of a surveyor-general (*Grand Voyer*) and his deputies, the construction and repair of roads and bridges had devolved upon the properties and tenants in the capacity not of citizens but of individuals. The pioneer tracks across the front of the seigneuries, (known as "royal roads" because the soil belonged to the crown) were made and kept passable the year round by the landholder or the lord of the manor. The "back" and crossroads, however, were built by the joint labor of the individual who owned the "benefited" property and the community, the former being exempt from any maintenance duties on account of having furnished the right of way. All bridges with a span under four feet were built by the tenant, all others by the community.

Under this old French system, the way was already being prepared for local organization. General Murray had attempted to establish the statute labour system in Canada in 1766, endeavouring to bring home to the community the necessity of co-operation. A different plan was followed, however, by Governor Carleton who in 1777 appointed, without any derangement of the French system, surveyors for each district and placed the work upon a military footing. Thus a beginning was made of a military road system carried out as far as Upper Canada was concerned by Sir John Simcoe immediately upon the creation of that Province in 1791.

(1) (With particular reference to the settlement of the older parts of the Province and the Public Works policy of the last century.)

(2) The great success that has attended the opening up of Northern Ontario (notably by the Colonization Roads and the Northern Ontario Development Branch) has not been mentioned in the following; the annual reports of these directorates speak for themselves.

One of the earliest accounts of the British Settlement in Canada (3) estimates the population on the north shore of St. Lawrence from Point au Baudet to the Bay of Quinte as "at least ten thousand souls"; Fredericksburg (then known as the Third Township) contained in 1787 about seventeen hundred settlers, but "it is difficult to say what number of valuable subjects that country may hereafter produce; certain it is, that it is capable of supporting multitudes, as the land is in general fertile, and on an average produces about thirty bushels of wheat per acre, even in the imperfect manner in which it is cleared, leaving all the stumps about three feet high, and from five to ten trees on an acre. This method of clearing is in fact absolutely necessary, because new cultivated lands in hot climates require shelter, to prevent the scorching heat of the sun, which, in its full, however, would burn up the seed. It has also been found expedient in stony ground to let the stones remain, as they retain a moisture favourable to vegetation."

From another source (4) we learn that by the year 1791 "some thousands of people had spread themselves over the district of Niagara, and over lands still more remote from Quebec, particularly in the Western District. Between these new settlements and the country upon the St. Lawrence there were large tracts of wilderness intervening, which the Indians still held as hunting grounds, and through which there was no road whatever in the year 1791, nor for many years afterwards. The mail from Quebec found its way into this region but once or twice in a twelvemonth; for it was in fact only capable of being traversed by Indians and hunters, or by persons as active and hardy as they. The common way of travelling from the upper country, to and from Montreal and Quebec, was through the lakes and rivers in the summer season; and some of the early settlers have said that when they first came into the township of Ancaster they had to ride sixty miles to Niagara through an Indian trail for every article they required, which they could not raise or manufacture."

In those early days and indeed for several decades, little or no thought was given to the commercial possibility of roads. The great lakes and rivers of the New World afforded transportation facilities which the early settlers scarcely imagined could be supplanted by roads hewn through the forest. A land journey was regarded as a more or less tedious *portage;* only the desire to avoid a long detour by water or to facilitate an existing portage could have justified the construction, as early as 1794, of Yonge Street and the Dundas Road.

A traveller writing a few years later of the eastern section of Upper Canada says. (5) "On the north-west side of the St. Lawrence, except for about fifty miles or thereabouts, are roads, and also scattered settlements, at no great distance from each other, the whole way between Montreal and Kingston, which is situated at the eastern extremity of Lake Ontario; but no one ever thinks of going thither by land, on account of the numberless inconveniences such a journey would be attended with; indeed, the difficulty of getting horses across the many deep and rapid rivers falling into the St. Lawrence, would in itself be sufficient to deter travellers from proceeding by land to Kingston, supposing even that there were none other to encounter. A water conveyance is by far the most eligible, and except only between

(3) John Long's Journal, 1768-1782-1791 (pp. 218-220), ed. R. Goldthwaite. (The Arthur H. Clark Co., Cleveland, 1904.)

(4) Canada: Past, Present, Future, being a historical geographical, geological and statistical account of Canada West, by W. H. South. Intro., p. xxxv. (Toronto, 1851.)

(5) Isaac Weld, Jr.: Travels through the States of North America and the Provinces of Upper and Lower Canada during the years 1795, 1796, 1797 (vol. II., p. 22). London, 1802.

Quebec and Montreal, it is the conveyance universally made use of in every part of the country, that is, when people merely wish to follow the course of the rivers, in the neighbourhood of which alone there are any settlements."

Thus the opportunities afforded by slack-water navigation, the prevalence of swampy land west of the Niagara Peninsula and in the eastern part of the Province, and the conditions that recurred annually with the Canadian spring, combined to militate against any serious attempt to improve transportation by land. To these causes may be added the temporary advantage conferred by the winter road, the snow and ice that formed from Kingston eastward obliterating any distinctions which might have been drawn in summer between good and bad thoroughfares. These roads, it may be noted, provided the sole opportunity for the hauling of grain and timber to the shipping ports. Highway legislation over a long period had been particularly concerned with the maintenance of winter roads, the French law compelling the *habitant* to level the track made by his *cariole,* to lower adjacent fences within two feet of the ground and to plant evergreen shrubs as a guide for the traveller. The summer road was in many places no better than a bridle-path, and its chief industrial use was as a means whereby grain could be taken to the nearest grist mill. It is estimated that only about one-third of the crop was sent out to market in the same year in which it was grown; in those days there was little competition, and the prices obtained more than compensated for the delay. With winter roads alone the settler could not be content. The summer road had to come into being, and with the advent of the *corduroy,* trees were felled by the hundreds, to bridge swamp land hitherto impassable except in winter and to convert the bridle-path into a highway.

The first highway legislation of Upper Canada was enacted in 1793, authorizing the Justices of the Peace to be highway commissioners in their respective divisions, with overseers elected at parish meetings, who were to act as fence-viewers and were under orders from the commissioners to repair and superintend work on roads, bridges and streets. It was also their duty to see that landowners fulfilled what had been known in England as "statute duty." At first the law compelled all inhabitants of parishes and townships (or their substitutes) to bring suitable road instruments and to work for not more than twelve days in every year, eight hours' work being exacted for each day; owners of carts, ploughs, oxen, or teams of two horses were obliged to lend their team and vehicle with one able man in charge for not more than six days. Commutation was allowed at the rate of 3s. per diem in the first case, and 6s. in the second case, but it was clearly stated that if the price of terms and labour in the parish was too high, labour could be demanded instead of commutation. Provision was made as well for an addition to the district assessment of not more than £50 if further money was needed. The difficulty of travelling at this time is illustrated by the section in the statute which authorized overseers to order the opening of a passage by property holders through the snow and the erection of "stakes or beacons" by the side of the road in order to guide travellers. This Statute Labour Law was constantly altered during the years that followed, the number of days of commutation being determined in 1798 by the assessment roll of the parish or township, the period varying from six days in the case of £100 assessment to twelve days if property was rated at more than £300. The minimum number of days was reduced in 1810 to but three if the assessment did not exceed £25 and it was enacted that no statute labour should be performed from the 10th of May to the 10th of June, or from the 1st of July to the 1st of October. This same Act authorized the Justices of the Peace in each district to

appoint one or more surveyors in every county and riding, with provision for a report of the latter on the question of highway alterations after due application from freeholders. The width of the roads might vary from 30 to 60 feet, the latter however being the minimum for front and concession roads. The surveyor could sell old road allowances, the money to go to the owner of new land for compensation. Public highways were also defined as those laid out by surveyors, designated by Acts of Parliament, or built with the public money, also those on which statute labour was performed, and all roads passing through Indian lands.

The preamble to an Act of 1804 (44 Geo. III., c. 6) contains in the best manner of early nineteenth century documents a striking reference to the highway situation at that time: "Whereas it would very much advance the general prosperity of this Province, if the public highways and roads already laid out in the several districts thereof were amended and repaired, and new and additional roads laid out and opened in certain parts of the Province, to which at present there is very difficult access and certain bridges are also become indispensably necessary, the want of which at present much endangers the lives of the king's subjects; and whereas the rates heretofore imposed, and the duty by law required to be performed on the said public highways and roads are altogether inadequate to the several purposes aforesaid, and the imposing additional burthens by levying district rates sufficient for the several purposes aforesaid, would in the present circumstances of the Province be found inconvenient and the necessary provision can only be made out of the surplus of certain duties and taxes as yet unappropriated; in order therefore to defray the expenses of repairing, amending, laying out and opening such highways and roads, and making such bridges as aforesaid . . . Be it enacted. . . that from out of the rates and duties already raised, levied and collected to and for the use of the Province, there be granted to His Majesty, His heirs, and successors, the sum of One thousand pounds. . . . . arising from such rates and duties as last aforesaid. . . which sum of One thousand pounds shall be disposed of, appropriated and applied in the repairing of the roads already laid out and in the laying out and opening new roads, making bridges in the several districts aforesaid." This is the first case of general provincial aid in Ontario, and by it a precedent was set which was followed for several years. Particular roads were to be designated for aid by proclamation of the Governor-in-Council, special commissioners being appointed to look after the expenditure in the case of any particular road. Thus at a very early date, there is a division of duties in roadmaking between the Province and those local units which were later known as municipalities. These special commissioners were given exclusive authority over the roads in their charge, and no interference was tolerated from the Justices of the Peace in their capacity as ordinary highway commissioners. No provision, however, was made for Government maintenance, all such roads when built or improved passing into the general category. The amount of the grant was expended fairly evenly among the districts, and was increased from £1,000 to £1,600 in 1806 and 1808, and to £2,000 in 1810. It would appear that these grants were not always expended for in 1811 it was enacted that the accumulation of any surplus should be handed over by the retiring commissioners to their successors; on the other hand it was soon found that bridge estimates were very much exceeded by the actual cost, an instance in point being the construction of a "bridge of durable timber" over the Grand River in 1809 for which £250 was granted in that year, and supplemented by an equal amount in 1810. The roads to be improved by provincial grants were chiefly main travelled roads along township

fronts, to mills and wharves, from farm to farm and from tavern to tavern. Some attention was given as well to land improvement, as can be seen from the grant of £100 in 1810 for the purpose of draining the Grand River swamp, while the general opening up of the western country was effected by such expenditures on the Middle Road and Dundas Street in 1811 as were considered sufficient in the following year for the whole of the London and Niagara districts. A considerable amount was also spent during these years on bridges, particularly on those over the outlet of Burlington Bay and over the Humber, Credit and Don.

Meanwhile collection of the district rates had been put on a uniform basis by the Act of 1807—which ordered the assessment of an acre of cultivated land at 20s. and uncultivated at 2s., town lots being fixed at £10. The assessment of houses ranged from £15 to £60, additional fireplaces being valued at from £5 to £10. Grist mils were placed at from £100 to £150. A merchant's shop, a stallion and a billiard table were equally assessed at £200. It was stipulated, however, that the rate was not to exceed one penny in the pound. Uncultivated land goes up to 4s. in 1811, with town lots rated as high as £30 and houses at £20 as the minimum assessment.

The above legislation effected creditable results during the last years of the eighteenth century. While the statute labour system was not without its limitations it solved the problem of land transportation for at least the next half century. Taxes were too light to cause dissatisfaction, and Upper Canada received from her English visitors compliments upon the easy burden of her citizenship. On the whole the records of these early travellers furnish pleasant reading to the patriot: although the same cannot be said of the fustian written towards the middle of the last century in which the Canadian was represented as being vastly inferior in civilization and ideas to nearly, if not all, the nations of the earth. Reference to the "good road" between Kingston and Montreal has already been made. The same writer (6) has described a journey made in Lower Canada during August, 1796, which, in its account of the post-road, may be considered as redeeming the early Canadian highway from the reflections cast upon it during succeeding years. "In no part of North America," he writes, "can a traveller proceed so commodiously as along this road between Quebec and Montreal: a regular line of post-houses, at convenient distances from each other, being established upon it, where calashes or carioles, according to the season, are always kept in readiness. Each post-master is obliged to have four calashes, and the same number of carioles: and besides these as many more are generally kept at each stage by persons called *aides de poste*, for which the post-master calls when his own happens to be engaged. The post-master has the exclusive privilege of furnishing these carriages at every stage, and, under a penalty, he must have them ready in a quarter of an hour after they are demanded by a traveller, if it be day-light, and in half an hour, should it be in the night. The drivers are bound to take you on at the rate of two leagues an hour. The charge for a calash with a single horse is one shilling Halifax currency (*i.e.* 20 *cents*) per league: no gratuity is expected by the driver. The post calashes are very clumsily built, but upon the whole we found them easy and agreeable. They are certainly far superior to the American stall waggons, in which, if persons wish to travel with comfort, they ought always to set out provided with cushions for their hips and elbows, otherwise they cannot expect but to receive numberless contusions, before they reach the end of their journey."

(6) Isaac Weld (vol. I, p. 2).

Although the first stage in Upper Canada was not established until 1798, along the west bank of the Niagara River, from Newark to Fort Welland (the charge being five shillings and the schedule providing for three days in the week), Yonge Street had been built and Dundas Street was well under way. Ancaster was also connected with Niagara by means of a road built by private subscription—a striking instance of the public spirit of those early days, and of the prosperous condition of the Niagara Peninsula. In this connection, a short account of the incoming settlers has been left by the Surveyor-General of the Province to the following effect (7): "Nineteen covered waggons, with families, came in to settle in the vicinity of the county of Lincoln, about the month of June, 1798, and the facility with which some of these people travel, particularly in crossing the small rivers, deserves to be noticed. The body of their waggons is made of close boards, and the most clever have the ingenuity to caulk the seams, and so by shifting off the body from the carriage, it serves to transport the wheels and the family." There is also an interesting description of the roads in the peninsula and of navigation on the Niagara River. "There is a good road," says the writer, (8) "from Newark along the bank of the River Niagara, to Fort Erie, passing through Queenstown and Fort Welland, formerly called Chippewa; Queenstown on the lower landing (where there are huts for a regiment) is at one end of the carrying place, as Fort Welland is at the other. When the wind serves vessels run up from Newark to Queenstown and unload their cargoes, receiving packs of peltries in return, for the Lower Canada merchants. Fifty waggons have passed this carrying place in the course of a day. In Woodhouse and Charlotteville (*township, Norfolk County*) which lie immediately within the long promontary, there is a great spaced country, thickly timbered, and without underwood, which greatly facilitates cultivation. It is well calculated for roads, and is sufficiently open for the carriages used in Europe, looking more like a royal forest than the uncultivated lands of nature. . . . . From Charlotteville there is a good road through the country to the Mohawk villages on the Grand River." According to the same authority, the eastern part of the Province were not behind the general movement, for the land on the St. Lawrence front was "for the most part fertile and under as high a state of cultivation as can be expected from the time it has been settled; the first improvements being made since the peace of 1783, when all was in a state of nature and heavily timbered. There are now between 30 and 40 mills in the extent mentioned, on this river, the most remarkable of which are on the Gananoque. Good roads have been opened, and bridges well constructed; some of them over wet lands, and the mouths of creeks and rivers of very considerable extent; and the first settlers have been able, by their very great industry, to erect comfortable houses. The fertility of the soil about the Bay of Quinte," continues the account, "is generally allowed; the land is rich, easily worked, and produces several crops without manure; twenty-five bushels of wheat are often produced from an acre." Settlements had by this time also been effected in the back townships and on the Ottawa "or Grand" River.

The first main achievement to which reference has been made was the laying out in 1794 of Yonge Street by Governor Simcoe "who (says the Surveyor-General) having visited Huron by Lake aux Claies (formerly also called Ouentaronk, or Sinion and now named Lake Simcoe) and discovered the harbour of Penetanguishene (now Gloucester) to be fit for shipping, resolved on improving the com-

(7) A short topographical description of His Majesty's Province of Upper Canada in North America, by David Wm. Smyth. (London, 1799.) Postscript.

(8) David Smith; *op. cit.*, p. 31.

munication from Lake Ontario to Lake Huron by the short route, thereby avoiding the passage of Lake Erie. This street has been opened in a direct line, and the road made by the troops of His Excellency's corps. It is thirty miles from York to Holland's River, at the Pine Fort called Gwillimbury, where the road ends. From thence you descend into Lake Simcoe, and having passed it there are two passages into Lake Huron; the one by the river Severn which conveys the waters of Lake Simcoe into Gloucester Bay, the other by a small portage, a continuation of Yonge Street, to a small lake which also runs into Gloucester Bay. This communication affords many advantages; merchandize from Montreal to Michilimackinac may be sent this way at ten or fifteen pounds less expense per ton, than by the route of the Grand or Ottawa River; and the merchandize from New York, to be sent up the North and Mohawk Rivers for the north-west trade, finding its way into Lake Ontario at Oswego (Fort Ontario), the advantage will certainly be felt of transporting goods from Oswego to York, and from thence across Yonge Street, and down the waters of Lake Simcoe into Lake Huron, in preference to sending it by Lake Erie. . . . . Farm lots of 200 acres are laid out on each side of Yonge Street, having a width of a quarter of a mile each, on the street; in general the land is excellent, and fit for every purpose of husbandry. After leaving Gwillimbury, you enter Holland River, and pass into Lake Simcoe by the head of Cook's Bay, to the westward of which are oak plains, where the Indians cultivate corn; and on the east is a track of good land."

A despatch from Governor Simcoe himself states that "the road from York to the head waters of Lake Huron has been opened by the soldiers, and by these means a very excellent track of country is rendered accessible to future settlers and a ready communication afforded to the post which public service demands should be removed from Michilimackinac to Penetanguishene or Gloucester." (9). . . The trader who lives at Machadosh has had cattle driven to him this spring from York in six days; and nearly half of the road on Yonge Street is allotted to settlers." (10.)

A letter to the Home authorities advocating this route mentions the fact that the soil between the Bay of Quinte and Lake Simcoe "is perfectly calculated for farming, and before the summer the road of communication will probably be thickly settled; thirty families are now on the eve of being located in its vicinity and there is but little doubt but that by this communication the North West Company will supply themselves with many of their heavy articles, instead of by the circuitous route of Lake Erie. The inhabitants will soon raise abundance of provisions—in the meantime they can procure them at a cheaper rate from the Bay of Quinte than they are to be met with at Niagara." (11.)

This route to the North-west (12) was not the only object of Governor Simcoe in laying out Yonge Street: his general policy kept continually in view the establishment of a new capital for Upper Canada on the site now occupied by London. In a letter written in 1794 to the Duke of Portland he states that "his general ideas in administering the Government of Upper Canada are to form the condensation of a numerous agricultural people between the three lakes, Huron, Erie and

(9) Public Archives of Canada, Series Q., Vol. 282, Part I, p. 165. Letter from Governor Simcoe to Duke of Portland, Feb., 1796.

(10) Ibid. p. 26.

(11) Ibid. p. 39. Letter from Governor Simcoe to Viscount Dorchester.

(12) For trade routes to Michilimackinac, the Mississippi, and the Spanish Territory —see also Public Archives, Series Q, Vol. 280, Part 2, pp. 362-404, contained in Appendix (not included in this Report).

Ontario; to facilitate this purpose I wished to occupy an internal Capital in the spot designated London, by Military roads communicating with the important Military Point of *York* on Lake Ontario, *Turkey Point* near Long Point, on Lake Erie, and by the River with *Chatham* on the River Thames. These places if they should become military or naval arsenals must be towns of considerable consequence." Land was to be purchased from Chippewa Indians for the "proposed seat of Government and the continuation of the road to it." (13.)

In order to effect his favourite scheme, Simcoe was instrumental in establishing a post road from Burlington Bay to the Thames, at the present City of Woodstock, and in his report to the Privy Council in 1794 advocated the construction of a military road from London to Long Point. It was also part of his plan to connect by through highway the proposed capital at London with Quebec and to supplement by stretches of military road the already existing line from Kingston to the eastern boundary. The Surveyor-General, writing in 1799, states that "Dundas Street has been considerably improved between the head of Lake Ontario and York, and that the Government has contracted for the opening of it from that city to the head of the Bay of Quinte, a distance of 120 miles, as well as for causewaying of the swamps and erecting the necessary bridges; so that it is hoped, in a short time there will be a tolerable road from Quebec to the capital of the upper province." In the same year a continuation eastward of Dundas Street was opened by Asa Danforth from York to Smith's Creek in Hope Township, Durham.

While the above may be taken as evidence that highway construction was in a state of progress in these early times, military despatches are hardly complimentary in their reference to internal communications. It would appear that in certain parts of the Province the settlers were unwilling or unable to devote sufficient time to statute labour, with the result that military parties (the Queen's Rangers in the case of York) were required almost unaided to erect buildings, make bridges and cut roads. When the seat of government was moved from Newark (Niagara) to York, the latter was "in a manner cut off by the want of roads from an easy land communication with the rest of the Province,"(14) while the general statement is made in 1798 that "the roads of the Province (particularly through the new settlements) are in such a deplorable state of neglect that the farmers cannot bring their produce to market; and the communication between the different parts of the Province is in consequence scarcely attainable except by water." In the Niagara Peninsula as well there was such a lack of good roads as to cause several complaints from the judges travelling on circuit and from petitioners on their way to the Government. It was, therefore, decided in 1798(15), "that roads be opened with bridges between the Humber and the Credit and from the Credit to the head of the Lake, the work to be done by the Queen's Rangers."

For the laying out of such roads Augustus Jones, Provincial Land Surveyor, was summoned to York (16). Having laid out a "site for the Jail," together with streets, he "was pleased to write a letter to the President (of the Council) recommending a survey made of that part of the grounds from the Humber to the Credit to see the most eligible situation for the road to be opened, which the President approved of . . . Saturday, 19th May, '98—Busy marking the most eligible ground for a road from the mouth of the Humber to a Creek called Lamabinecouce.

(13) P.A. Series Q, Vol. 280, Part 2, p. 451. Letter from Governor Simcoe, 1794, to the Duke of Portland.

(14) Ibid., Vol. 283, Part 2, p. 580.

(15) Ibid., Vol. 286, Part 1, p. 45.

(16) Field Book of Augustus Jones, P.L.S.; published by the Ontario Archivist.

Struck it above the pond and marsh—fine weather—Sunday, 20th—Busy examining the ground between the aforesaid Creek and the Etobecoake, marked a line part of the way, went too far back. Came into low swampy ground where I left it—Monday, 21st May, 1798.—Busy marking a line from the aforesaid Lamabincouce to the Etobecoake nearer the lake than the other yesterday, which is better ground. Pleasant weather . . . . Wednesday, 23rd May 1798.—Busy examining the Etobecoake to find a place for to erect a bridge which is not so favourable as could be wished, the Creek spreading in many branches—the most eligible place is opposite Major Smith's clearing, a little above the Pond—went on the Credit. Pleasant weather. Thursday, 24th—Busy marking the grounds for the road from the Credit to the Etobecoake, marked from the Credit a strait course a back from the Crossing Points, found it too wet, returned back along the bank of Lake which is the dryest and best ground, fine weather, rain and thunder in evening. Friday, 25 May, 1798.—A survey of the grounds for a proposed road from the Plains about one mile west of the Credit leading to the Lake at the Credit, thence along to the mouth of the Humber . . . . along beach to the place proposed for to bridge the Credit, high winds from N.W." In the following month Jones was required to make a statement of the settlers on Yonge Street, together with a list of improvements, which included log huts and small or large clearings, in two cases as much as 40 acres.

The difficulties of campaigning during the War of 1812-1815 endorsed the opinion of the militia that the roads of Upper Canada had, except in a few instances, been sadly neglected. Two letters(17) are extant asking the Governments of the two provinces for substantial aid towards the improvement of the highways in the Eastern District, one written in 1808, before the war, by Bishop Strachan (then rector of Cornwall) declaring that this District "is perhaps worse off than any other in point of roads. The Scots Settlement (i.e., Glengarry) reaches so far back that a great number of roads are requisite; but they are in a wretched state, not always passable for horsemen and almost never for waggons." The other letter is from the pen of Bishop McDonell (then parish priest in Glengarry) written in 1815, at the close of the war. It pointed out to the Commissioners of Internal Communications for the District of Montreal that constant travelling of military transports had rendered all the back roads impassable, but that the main road was "very good for any description of wheel carriages through the counties of Glengarry, Stormont, Dundas, &c., &c., all the way to Brockville and very practicable to Kingston." There is, of course, the other side of the question, which finds expression in a private letter written in January, 1808, to a friend in England(18) by Sir Francis Gore, who says: "Another cause of dissatisfaction is the want of Roads. Is it reasonable for the people of this province to expect, after the bounty already lavished on it by Great Britain, that she is to make their Road? Concede this point to them, and we shall soon hear of their accusing Government of injustice, for not having built their houses. The fact is that the population will not yet afford of good roads."

In 1812 the roads in the neighborhood of York and Twelve-Mile Creek were "so much neglected since the beginning of the war, that during wet weather, in some parts, they are become totally impassable," wrote General Drummond to Sir George Provost. (19) As for the roads west of Niagara, they were in 1814 "so

(17) P.A. Series S (unpaged).
(18) P.A. Series Q, Vol. 311, Part 1, p. 8.
(19) P.A. Series C, Vols. 679, 682, 683, 688 B, 733, passim for despatches during the war.

excessively bad that should the enemy land at Long Point, they could with ease arrive at the Grand River, before Major Deane, and cut off his retreat in the passage of that River." When in the same year a military road was being built from Lake Simcoe to Penetanguishene, the repair of Yonge Street became imperative owing to the heavy transport traffic. In the East conditions were such that "the Grand River swamp tho' certainly bad is infinitely better than many parts of the road which are daily passed below Kingston," although 1813 has seen the construction at a cost of £150 of a stone road to Gananoque (20).

There is on record, it may be observed in passing, an editorial in the "Spectator" (published at the Village of St. Davids) of the issue of April 26th, 1816(21), enlarging upon the merits of a certain short route from Queenston across the Grand River through the counties of Lincoln and Haldimand, to the following effect:—"It is certainly a subject of wonder that the necessity of opening a road somewhat in the above direction has never before been suggested—a road that carries you through the centre of the county, a road that conducts you to the district of London, almost, as it were, on a level; you will not be plagued, and pestered, and teased and harrassed with your twelve, your fifteen, your sixteen-mile hills. The time, the distance consequently the expenses of the traveller will also be surprisingly diminished. What will the reader say when we tell him that in travelling from Queenston this new contemplated route to Davis's Mills (a distance of 60 miles) he will save thereby six." The editor proceeds to point out that if the traffic between Queenston and London District were estimated at 2,000 persons yearly (who would each be able to save one dollar and a half by the shorter route) the annual gain to the community would be at least $3,000.

By the year 1821 the highway situation, however, was considerably improved; a map of that date(22) shows the main road system to be as follows:—(I) From Amherstburg to Aldborough, along the north shore of Lake Erie (Talbot Street), then bending slightly to the north-east to meet the road running from Dundas Street (at Brantford) southward to Port Dover, where two branches of this same road also converged. From Port Dover this lake shore line ran eastward to Fort Erie and turned northward to Fort Missasaga. (II) From Queenston a road also went westward to Ancaster, crossed the Grand River at the terminus of the Port Dover Road and turning south-west reached Sandwich, running thence to Amherstburg. This circuit formed by lake shore and through county lines was also connected by a road from the north-west corner of Dorchester to the Brantford-Port Dover road at a point in Oakland Township. (III) Parallel with this last route and separated from it by the Sandwich-Ancaster road was Dundas Street running from Dundas to London and passing through Woodstock (then Oxford). (IV) From Dundas a road ran eastward to York (following the lake shore) and thence to Kingston, with branches following the outline of the present Prince Edward County. (V) From Kingston a spur ran south-west into Fredericksburg Township, but the main highway continued eastward along the bank of the St. Lawrence as far as Vaudreuil, with an earlier and more northerly route running from the western boundary of Cornwall Township to the present Coteau Junction, where it again met the main road. From Vaudreuil a road followed the Ottawa River westward to Longueil. (VI) A few miles east of Kingston a road with numerous detours ran as far as Gower Township on both sides of the Rideau River, branch lines going to Perth and to Brockville. (VII) Yonge Street. (See above.)

(20) P.A. Series C, Vol. 273, p. 1.
(21) Vol. 1, No. 13, given in P.A. Series Q, Vol. 321, p. 190.
(22) Map (1821) in Gourlay's Volume on Upper Canada, and reprinted in this Report.—See following note.

The author of the volume containing the map to which reference has been made has left a valuable account(23) of general agricultural and highway conditions in the different townships during the years 1817-18. Unfortunately a misunderstanding arose between the author and certain ecclesiastics, which resulted in a withholding of returns from the townships in the east and a threatened trial for the enunciation of "principles inimical to the peace and quiet which the inhabitants of this province so happily enjoy." The reports published, however, reveal the nature of the charge; the ratepayers of the western and central portion of the Province freely give their opinion that the chief causes which retarded the improvement of Upper Canada were the holding of extensive lands by unassessed absentees residing in England, the existence of Crown, clergy and other reserves, want of capital and population and (in the case of Waterloo, Humberstone, Canboro and Caistor Townships) the extreme badness of the roads. Nor were these causes entirely unconnected; statute labour was wholly unable to cope with the construction and maintenance of roads through the country held largely by absentees, and the main highways suffered in this regard equally with the purely local roads. It is interesting to compare the situation on Dundas and Talbot Streets at this date. Governor Simcoe, with the honesty generally characteristic of his administration, had refused to allow grants on Dundas Street to other than actual settlers, but no sooner was he recalled than grants had been made indiscriminately. The Reporting Committee of Deleware, Westminster and Dorchester urged the purchase of Indian lands south-west of London and the continuation of Dundas Street over a road which was already in a tolerable state, with grants made to actual settlers only "on the principle of Talbot Street." That the latter, running through the lake shore townships from Aldborough to Bayham, had achieved noteworthy results in these settlements during a few years is shown by a table(24) of land improvements on this road compiled in 1817.

While the above land evils existed, as was inevitable in a young Crown Colony, the fairly comprehensive road system already outlined was being brought into effective use by the establishment of stages, following the precedent set in 1798 in the Niagara District. In 1816 a stage began to run twice a week between Kingston and Montreal (a two days' journey) and in the following year a weekly journey could be made from Kingston to York for $18, reduced in 1818 to $10(25) but the Prescott-York route was used only when water navigation was impracticable. In 1826 stages ran from the Cascade Rapids to Coteau Landing, and from Cornwall to Prescott (until the rapids were overcome in 1832, and the steamer "Iroquois" made its appearance). In the Western Peninsula, the first stage between York and Niagara was established in 1826, the fare being $5 and the time seventeen hours; the following year saw the granting of a 21-year franchise to the stage from Ancaster to the Detroit River through Brantford, Burford and Deleware. Presently the four-horse coach appeared, and by 1842 a daily line, capable of meeting mail requirements, had been established throughout the Province.

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(23) Statistical account of Upper Canada, compiled with a view to a Grand System of Emigration, by Robert Gourlay. Two vols. (London: Simpkin & Marshall, 1822.) Vol. 1, p. 269, sqq.

(24) Ibid., p. 352. (One settler who took possession of his grant in 1811 had performed military services during the war, cleared 60 acres and owned a farm worth $2,200; another farmer arriving in the previous year had already cleared 15 acres and was worth $1,300.)

(25) (For various transportation data) see Eighty Years' Progress of British North America, by H. Y. Hind, M.A., F.R.G.S., L. C. Keefer, C.E., and four others (Toronto: L. Stebbins, 1863), passim.

Meanwhile legislation in Upper Canada had been concerned with slight amendments to the Statute Labour Act, and not until 1821 is there again mention of a provincial grant. In that year money was appropriated towards "opening and completing the Great Line of Communication from the Ottawa River passing through Richmond and Perth to Kingston," with a view to opening up Carleton County. For this work the sum of £200 was granted and in the following year a market place was established at Perth. Two years later Major Elliott of the 68th Regiment received the report on the state of this road.(26) Owing to unfavourable spring conditions logs had actually been afloat for some time, and it was recommended that a road should be cut along high land instead of the low swampy ground where location had been made by the military settlers, who "have quite enough to do to feed and clothe themselves and families, without giving much more than the statute labour requires from them for the maintenance of the roads; and from what I observed as I went along I have every reason to suppose that if they are not materially assisted by His Majesty's Government it will still be many years ere this line of road is made passable for even an empty wheel carriage. In the present state of the road the settlers are completely cut out from all communication with each other except on foot, and consequently from the mills during the summer months, except they carry the grain on their backs thereby incurring an immense waste of time and labour, which ought to be bestowed on their farms. In the present state of the country," continues the report, "its utility is not very great in any other point of view than as a military communication."

The expenditure of £200 upon this Military Road, it may be noted, was the only assistance given by the Province to highways until 1826, for Upper Canada was becoming deeply interested in the question of internal navigation, to such an extent that a commission was appointed to carry out the construction of canals "between Lake Erie and the eastern boundary of this province" with an authorized expenditure of £5,000 for Burlington Canal alone, and frequent grants during subsequent years. Appropriations were made, however, for bridges in Johnstown district and over the Thames, Rideau and Otonabee rivers. It is noteworthy that in the first instance legislation provided for a district assessment of one penny in the pound for not more than five years, to constitute a sinking fund for repayment of a loan of £2,500. By legislation also in 1824 statute labour was ordered in towns under the direction of a surveyor of streets, and might be expended in the form of labour or money on roads and bridges in the vicinity of the town; thus co-operation between urban and rural communities was anticipated even before the establishment of Municipal Government. The expenditure of Statute Labour money in townships was also by this Act (4 George IV. c. 9) taken away from the overseers and given to Justices of the Peace. Subsequent amendments of the law up to the Union of the two Canadas touched lightly upon the statute labour question, but the advent of the toll road necessitated the exclusion in 1838 of macadamized roads from the list of those under statute labour and township overseers, and in 1840 the commutation of labour from residents living within half a mile of such roads at 2s. 6d. a day.

It was obvious that the old system of construction and maintenance by groups of settlers could not keep pace with the need of well built post-roads, nor that internal communication should suffer from badly built bridges and frequent fording places. The day of the toll-bridge and toll-road had come, but not without certain doubts and misgivings on the part of thinking men. When the question had been

(26) P.A. Series C, Vol. 274, pp. 118-133.

Macadamized Road in Winchester, Ontario.

The Kingston Road in York County, near Toronto.

raised as to the means of building a bridge from Kingston to Point Frederick, negotiations lasted from 1821 to 1828, that is to say, for two years after the Cataraqui Bridge Company was formed. When the toll was finally fixed, the company could demand tenpence for every vehicle drawn by two horses or threepence for every foot-passenger and a half-penny for every single draught animal, while the Government paid annually £300 for the free passage of army and navy officers and privates crossing the bridge in discharge of their duty. Provision was then also made for the appointment of a commission of five to report, if necessary, on the state of repairs. While the construction of this bridge was necessary, the amount of toll was considered as "likely to enhance the price of all materials of this description (bread and meat) procured on the Kingston side," according to a criticism at the time.(27) The formation of several toll companies followed this experiment, the Brantford Bridge Company being formed in 1833 with a Government debenture of £1,500; in the same year the sum of £4,050 was raised by loan for a toll-bridge over the River Trent, and in 1834, for a bridge at Paris over the Grand River, £1,500. The tolls on all such bridges were to be fixed by commissioners appointed by the Governor-in-Council. A lengthy comparison might be made of expenditure on roads and bridges on the one hand and on harbours and canals on the other, during these years; it may be sufficient to point out that (to take a specific instance) in 1832 Government loans and debentures for Burlington Bay and Desjardins Canals and for Cobourg Harbour amounted to £10,478, while the road expenditure for the same year amounted to £75. It would appear from the amount of Government grants during the last ten years of Upper Canada as a separate province that it was the policy of the Government to encourage alternately land and water transportation. The Act of 1830, which named four or five commissioners to spend money on certain post and front roads in each district, granted £13,650 for the operation of such improvements as might be required, the grant being supplemented in 1831 by £20,000, which amount was finally spent in 1833. In this year Dundas and King Streets and the Kingston Road were improved under conditions which brought about a toll-road system that in a few places remains in existence to-day. With the appropriation of £25,000 for small stretches of road in the various districts (the commissioners working on the analogy of the present township road), and the survey in the same year of a line of road from Hamilton to Port Dover, the highway legislation of the old province of Upper Canada, in so far as concerns statute labour roads, comes to an end. From that time forward transportation developed along other lines, and the years 1835-1841 witnessed the incorporation not only of Harbour and Canal Companies but also of the Cobourg, the Port Dover, the Erie and Ontario and the Burlington and Lake Ontario Railroads.

The need of the military road, however, had not yet gone, for the unsettled condition of the times that preceded Lord Durham's report brought again into prominence the question of mobilization and the transport of stores. Negotiations for the construction of a military road from Canboro to Port Dover lasted from 1815 to 1839, the chief obstacle to a decision upon the route being the difficulty of obtaining any money from the Lords of the Treasury for highway work "unless it should appear that it was undertaken solely with a view of securing a temporary military communication on an emergency."(28) In 1815 "there was no Road by the Lake Shore to the Grand River; the water being so high has done away with the communication by the Beach," reads the military report. Such a road would.

(27) Ibid., p. 173.
(28) P.A. Series C, Vol. 275, p. 38.

in addition to its strategic value, benefit the inhabitants who were "too few and too poor to spend much time to labour on roads, however aware they may feel of their importance." In 1836 orders were given to render the Canboro-Cayuga road practicable for artillery. The Commander of the Forces, it may be noted, had urged the coast route, but for financial and strategic reasons (owing to the ease with which attacks could be made from Lake Erie) the inland road had been approved, even against the opinion of the Home authorities, who objected to paying for a road used for "other than military purposes." This district was meanwhile partly served by a road from Canboro to Simcoe, expenditure on which was being reimbursed by a frontage tax of 10s. on every unsettled lot of 200 acres for ten years. In 1838 a warrant was issued for £1,000 out of provincial funds for a road from Simcoe to Drummondville, the work to be performed by military parties.

York County has the distinction of being the home of the Ontario toll-road, a Government loan of £10,000 being raised in 1833(29) with interest payable from toll revenues. Five trustees were named, with authority to cause surveys and estimates to be made, and to contract for the work. Commutation of tolls was allowed, but the penalty imposed for turning off a turnpike road in order to avoid toll, after proceeding part of the way, was ten shillings. Of this £10,000, four thousand was to be expended on Yonge Street and two thousand on the Kingston Road, with £1,500 for Dundas Street. After a period of fifteen years, when the last of the interest was due, these roads would become self-supporting and could pay off the principal in thirty years. This Act was followed by that of 1837 providing for the macadamization of the road from Dundas to Waterloo at an estimate of £25,000; Hurontario Street (south of Dundas Street to the Lake Shore) for £2,500; Hamilton to Brantford for £30,000; Yonge Street and other roads in the Home District by means of a debenture for £100,000; from Brockville to St. Francis with branch roads for £30,000; from Kingston to Napanee, and from Queenston to Grimsby for like amounts. Not only were these loans forthcoming from the Government, but it was expressly stated that if any deficiency was left by tolls in the Home District on which provincial credit had been raised in 1836, the balance would be obtained by means of an additional rate on all townships in this District. It was thus evident that the Provincial policy involved alike both the public community and the private company, and meant to make each responsible for the other. In the next few years trustees for several roads were appointed; in every case the financial interests of the Province were safeguarded and the people of the townships served were forced to commute their statute labour, the money being paid to the pathmaster of each division. It may be noted that the first mention of the term "Joint Stock Company" was in 1838 when the Windsor Road Company was formed with a capital of £5,000 in order to "establish a single or double railway or macadamized road or both from some point west of the Windsor Harbour in the Township of Whitby to the main York Road or Dundas Street." The Act of 1840(30) put these turnpike trusts on a uniform basis, and formed Boards of Trustees or Commissioners in each district, who were given authority over improvements on the macadamized roads, including the right to alter or sell old thoroughfares, with supervision over engineers, surveyors and collectors (to whom the tolls might be farmed out or sold by private tender). All persons living within half a mile of either side of such a road were required to commute statute labor at 2s. 6d. a day. Provision was also made

(29) Stat. U.C., 3 Wm. IV, c. 38.
(30) Stat. U.C., 3 Vic., c. 53.

for the co-operation of towns, it being stated in this general Act that toll-gates should not be removed from town limits until such corporations should assume part of the debt of the company.

The Union of the two Canadas did not occur until the Western Province had embarked upon a career of public works expenditure which, while characteristic of the times, was sufficiently advanced for a young colony to cause certain admiration from the Mother Country. Reference has been made to comparative expenditure on roads on the one hand and internal navigation on the other. The year 1840 saw the issuance of debentures for £31,055 to be spent on roads, and £90,250 for harbours and canals. Two years previously, interest on arrears in connection with public works expenditure had been so large that no more loans were allowed for improvement until all interest had been paid. The union with Lower Canada meant for this province increased expenditure in a department which had already assumed paramount importance. In 1842 a loan of £1,500,000 was raised in England, and by debentures chargeable on the revenue of the Province a slightly larger amount was voted chiefly for internal navigation, the draining of certain portions of the Sarnia-Quebec line and the macadamization of main roads throughout Canada West. The chief interest which the Municipal Act of 1841 has for the student of roads is the provision whereby the newly established District Councils might pass by-laws (subject to the approval of the Governor-in-Council) "for the making, maintaining or improving of any new or existing road, street or other communication and means of transit within the limits of the district, or for the stopping, altering or diverting any road, street, within the limits aforesaid," for the commutation of statute labour and the establishment of rates. By another Act of the same year the office of Commissioners of Roads ceased, and the Board of Works was established. District surveyors appointed by district wardens were required in any case to report to their councils; if the estimates exceeded £300 a decision had to be obtained from the Board of Works. In this way a provincial highway system came into existence, with the major authority in the hands of the Province, since it was expressly stated in the Act that all public works not specially vested in any other body should be under the control of the Board. Neither Act affected in the least the position of the turnpike road, the toll bridge or any provincial or military works.

Thus Canada West was already committed to building roads of macadam, gravel and plank; several being constructed by local funds, others out of the provincial revenue and all such surfaced roads controlled by Joint Stock or Turnpike Companies. The principle had been laid down by Macadam in 1820(31) that "it is the native soil which really supports the weight of traffic; that while it is preserved in a dry state it will carry the road and the carriage also; that this native soil must previously be made quite dry, and the covering impenetrable to rain must then be placed over it, to preserve it in that dry state; that the thickness of a road should only be regulated by the quantity of material necessary to form such an impervious covering and never by any reference to its own power of carrying weight." Judged by this standard, the *corduroy* had become hopelessly effete, but timber was in those days much cheaper than stone, and the plank road of the 40's and 50's was allowed to bring several turnpike companies sufficient revenue to reimburse many times over the cost of the original road. This method of construction was no doubt of value where the bed was of sand, and might be considered a transition stage from the earth to the stone road, gravel being at that time more expensive than it is to-day and not being considered sufficient for heavy traffic

(31) Report to the President of the Board of Agriculture, published with "Remarks on the Present System of Road Making, etc." John Loudon McAdam (London, 1821).

unless laid to a depth which would mean a greatly increased cost. Neither were plank roads, as a matter of fact, always a "paying proposition," for "if there is little traffic, they warp and rot, ... if there is much traffic the horses' feet wear them down."(32) The superiority of macadam over the two preceding materials was generally admitted, but in Canada there was a "want of a sufficiently heavy traffic rapidly to consolidate the new road; two or three seasons are required to bind it, as these roads are avoided except for a short time in spring and autumn, unless sand or snow covers it. . . . . The repairs are then postponed until the road is worn out, when it is again renewed *en masse*." It would also appear that the turnpike commissioners in Canada West were less willing to expend freely on their trusts than the officials in the lower part of the Province, notably in the neighbourhood of Quebec. "In Upper Canada on the other hand," says the same writer, describing the general toll-road situation, "the roads are generally in the hands of lessees or stock companies whose practice it is to lay out nothing upon them which can be avoided. There is no stronger instance of the patience and law-abiding disposition of the people than in their toleration of so great an imposition as most of the toll-roads of Upper Canada. . . . . The continuance of so great a nuisance as barriers on even the best of roads must be regarded as evidences of a preference on the part of the most intelligent population of Upper Canada for direct taxation. It may be argued that those who wear out the road should pay for keeping it in order; but this might be met by an annual assessment on hoofs and wheels without the intervention of toll-gates. If the cities and market towns assumed the tolled roads, they have it in their power, by fees, market rates, &c., to levy the amount required and there would thus be bodies interested by their mutual competition in keeping the roads permanently in good order."

By the year 1843,(33) in addition to the operation of the turnpike trusts, the roads constructed under the direction of the Board of Works included gravel and plank roads from Sarnia and Brantford to London, a military road from L'Orignal to Lancaster, and in the following year a road from London to Sandwich and Amherstburg (with branches to Port Stanley and Rondeau Harbour on Lake Erie) and the Hamilton-Port Dover line. By means of local funds were constructed about this time a macadamized road running from Kingston westward, a plank road from Windsor Harbour on Lake Ontario to Lake Simcoe and lines from Hamilton to Queenston, from Oakville to Owen Sound and from Ingersoll to Port Burwell (the latter being built by a special "Road District Fund"). Yonge Street had already been macadamized by a local fund with Government assistance, and as a result of this and previous improvements farm values had risen. Building ground had increased in value within twenty or thirty years "from a few dollars per acre to as many thousand pounds. During my stay in Toronto, in the year 1844," writes a visitor to Canada(34) "six acres of land near to my residence in Yonge Street, and at the distance of one mile from the city, was sold in building lots, and realized the sum of £2,500. This allotment, and many other six-acre lots in the same street, about the same distance from the city were purchased, eighteen or twenty years ago, for £75 each. Proprietors of blocks of land extend their frontage to increase the value, by making branch roads from the principal ones leading from

(32) Eighty Years' Progress: chapter on Travel and Transportation (passim), for the following criticisms.

(33) See Papers—Public Works, Canada, ordered by the House of Commons, to be printed 21 August, 1843 (with map and data).

(34) Narrative of a Voyage to, and travels in Upper Canada, 1846 (p. 22).

the city." When it is considered that these roads would compare unfavourably with first-class county roads to-day, it can be readily understood to what extent farm values are increased by good roads.

The same writer has also some light to throw upon agricultural markets and roads as this time, as follows:(35) "Markets in Canada are subject to great fluctuations in the price of agricultural produce. During the season it will sometimes vary upwards of one hundred per cent., from various causes, all of which operate against the interest of the backwoodsmen. Some settlers occupy land at a great distance from markets and where the roads are sometimes quite impassable, and have no inland navigation, consequently prices advance, owing to a scant supply in the markets; but when the roads are improved by frozen snow, and sleighs in full action, then the markets are generally over-stocked, and the prices much reduced. . . . . I have noticed good teams in open winter weather enter the City of Toronto with very light loads of produce, that have had only a few miles of bad road to contend with, before they reached the turnpike road; and sometimes they are in such bad condition as to render it almost a matter of impossibility for the best horses to drag an empty waggon the distance of a single mile. The roads in some parts of the back settlements are merely openings, cut through the woods, and the stumps of the trees are left standing; and it requires the utmost skill of the drivers to guide the waggon in safety. The roads are so closely hemmed in on each side with the trees, that neither the sun nor the wind can much improve their condition; the winter's frost and snow alone can make them passable. Farmers who are settled at the distance of fifty or one hundred miles from the markets and are so circumstanced that they must from necessity part with their produce, take it to the nearest stores and mills, and leave the price to the honesty of the purchaser." It appears that the Government had in mind legislation proposing to defray part of the expenses of planking about one thousand miles of road in Huron District by taxing benefited lands to the extent of 8s. per acre for the first year of improvement and sixpence per acre annually until the completion of the road. Strangely enough the chief objection brought against such a scheme was that it would mean an "augmentation of the needy speculators' misery."

During the next ten years the planking and gravelling of roads throughout the Province tended to equalization of land values, more particularly between the front and back townships, but in several cases (as in Ernestown Township) farms on the road were worth twice as much as those further back and "the planks through the Townships of Toronto and Chinguacousy have added 50 per cent. to the value of the farms situated on them."(36) In Waterloo Township, at that time (1851) second only to York in population, the chief hindrance to improvement (as in 1821) was the badness of the roads.(37) The poor state of the thoroughfares in Simcoe County was credited to the "needy speculators" and the low assessment (only 4s. on the acre) for non-residents. The Huron tract had already been opened up by the Canada Company (with considerable profit to the latter) and traffic north-west of York had been increased by means of the Owen Sound Road to an extent best illustrated by the tale of a "gentleman holding an official appointment in the county, that having occasion to travel along the line when some new lands were opened for sale, he remarked that the tavern at which he was accustomed to put up, was in considerable confusion, and neither so clean nor so tidy, as he usually found it. On mentioning the circumstance to the landlady, she accounted for the state of

(35) Ibid., p. 83.
(36) Canada: Past, Present and Future, Vol. 1, pp. 70, 273.
(37) Ibid., p. 120.

affairs by remarking that during the week two thousand people had stopped at the house."(38) In the southern part of the Province as well a notable change had been made by the construction of the Hamilton-Port Dover plank road. "No better example," writes the same author, "could be shown of the advantage of making good common roads (that everybody may travel on) through the province. than is to be found in the country bordering the plank road from Hamilton to Port Dover; when we first travelled it, some five or six years ago, shortly after the new road was made, the country between Caledonia and Port Dover was a perfect wilderness, scarcely a clearing was to be seen, and a stranger would ask with surprise where the traffic was to come from to support the road. Mark the contrast: In five short years nearly every lot along the road has been settled and cleared and fine farms supply the place of dreary forests."(39)

Meanwhile legislation had not been idle. By an Act of 1845, the Province entered among the turnpike trusts on its own account, asking tolls from travellers and merchants using several locks, harbours, the bridges between Ottawa and Hull, over the Trent, the narrows of Lake Simcoe, and at Dunnville, Caledonia, Brantford, Paris, Deleware and Chatham, as well as on "all such parts of the main road from Quebec to Sandwich, of the main road from Queenston to Hamilton, of the Port Hope and Rice Lake Road, of the Windsor and Scugog Road, of the Main North Road from Toronto to Lake Huron at Penetanguishene, of the Hamilton and Port Dover Road, of the London and Port Stanley Road, as have been or shall be macadamized, planked or otherwise improved at the expense of the Province under the superintendence and management of the Board of Works."(40) In the following year another highway economy was affected by an Act opening Government allowances for such roads only as might be ordered by the District Council, and the newly created Commissioner of Works was given management and control of all public works constructed or maintained out of Provincial funds, including the making of surveys, granting of contracts and imposition of tolls. Another important step was taken at this time, whereby roads might be transferred from the Province to the District Councils, who were later allowed to take stock in the toll companies either by payment of money or improvement of certain stretches of road. The Province was also authorized to purchase toll-roads on repaying the capital, together with a bonus of 15 per cent. less the amount of the sinking fund. It may be observed that these Joint Stock Companies (road and bridge) had increased at a surprising rate throughout the Province, including from 1841 to 1847 trusts owning roads in the following localities:—Weston (macadam), Niagara and Ten Mile Creek (plank), Albion, Cobourg and Rice Lake (plank), Guelph and Dundas, Port Credit and Hurontario (plank), Guelph and Arthur, Cobourg and Grafton, Cobourg and Port Hope, Streetsville (plank), besides such bridge trusts as the Niagara Falls Suspension Bridge Company, incorporated in 1846.

Following the important legislation of 1849, providing for shareholding and ultimate purchase by the municipalities of these toll roads (one of the earliest stockholders being a combination of the municipal councils of Waterloo, Wentworth and Halton with shares in the Guelph and Dundas Road) it was enacted that roads situated in cities and incorporated towns should be vested in and repaired by these corporations, while all bridges and roads built by the Province and under the commissioner of works, might be released to municipalities on condition that no more tolls were collected. In the following year, that is to say in 1851, corporations were

(38) Ibid., p. 112.
(39) Ibid., Vol. 2, p. 163.
(40) Stat. Canada, 8 Vic., c. 30.

enabled to acquire public roads outside the limits of the municipality. It may be noted that in the case of Toronto, the Don Bridge and the Kingston Road east of that bridge were not handed over to the city. In 1857 municipalities were given the right formerly enjoyed by district councils to block up and sell useless roads, and two years later, all original road allowances were in the hands of these corporations, except highways under the direct control of the Board of Works or on ordnance lands. During this time there had been slight changes in assessment and statute labour regulations, the most important being the repeal in 1845 of the Act ordering commutation by ratepayers residing on macadamized roads. The chief change in assessment methods had been the levying of special rates in several instances on the local improvement plan.

The Consolidated Statutes of Canada, 1859, contain a Joint Stock Company Act for Upper Canada, which made careful provision for the proper conducting of business by such companies; tolls were still fixed by the companies themselves, but were not to be collected after a certain period of warning until the required repairs were made. It was also stipulated that municipalities might purchase after twenty-one years the company's stock at its current value. In the following year it was ordered that the County Engineer should examine into the state of such roads when necessary. Meanwhile the Assessment Act had been brought up to date, placing a municipal tax upon incomes (except those of farmers) and upon bank and railway stock among other incorporated companies (the personality of the latter not being assessed). Statute labour might now be abolished or compounded for five years by virtue of by-laws passed by townships, town and village councils, $1.00 per diem being the maximum commutation. The last year of the old Province of Canada saw the beginning of a County Highway System, for by the Act of 1866 counties might assume roads and bridges under their own jurisdiction with the appointment of commissioners, and such roads were to be either planked, gravelled or macadamized.

The Government policy was received by no means with unanimous approval. After 1841 Provincial expenditure was being devoted more and more to canals, railways and the public debt, while the local units were thrown upon their own resources, with the result that "a load has been imposed upon many of the back counties, which they are unable to bear. . . . . Again, the back counties contribute so much to the wealth of the front ones that the latter may with justice be asked to share a burden from which, by the natural formation of the district, the labours of their fathers, or from past Government aid, they are exempt."(41) The Colonization Road Scheme of the Government had, however, opened up some seven lines in what was then the northern country, i.e., the Ottawa and Opeongo Road, connecting the Ottawa River with Lake Huron, 170 miles long; the Addington Road, 61 miles long, intersecting the Opeongo Road; Hastings Road, 68 miles connecting Hastings County with Opeongo; the Bobcaygeon Road to Lake Nipissing; the Frontenac and Madawaska Road; the Muskoka Road—by means of which "the intending settler arriving in Toronto can in one day's journey from that city reach the very centre of the country,"(42) and lastly, a road from Sault Ste. Marie to Goulais Bay.

(41) Eighty Years' Progress, p. 125.

(42) Ibid., p. 306.

Before entering upon a brief summary of road development of this Province since it became known as Ontario in 1867, it might be well to review the period from 1841 in the following tabular form(43) :—

Mileage of Road constructed under Department of Public Works of Canada in this Province, 1841-1867	1,339.20 miles
(Cost of above construction work	$1,300,564.50)
Of the above mileage the amount macadamized was	112.50 miles
Of the above mileage the amount gravelled was	793.95 "
Of the above mileage the amount planked was	129.75 "

The following public roads and bridges were sold to incorporated companies during the years 1850-1865, with the amount of purchase money:—

The Brantford Bridge, and the Road from Hamilton to the Western Boundary Line of the County of Wentworth, being composed of the Hamilton and Brantford Road, and part of the London and Brantford Road (except what lies in the Town of Brantford)	£27,100 0 0
The Road through County Oxford, composed of all that part of London and Brantford Road, lying in said County, except what is in the Town of Woodstock	£50 0 0
The Hamilton and Port Dover Road and the Caledonia Bridge	$17,000 00
The Windsor and Scugog Road, from Town of Whitby through Townships of Whitby and Reach to Lake Scugog, with bridges, tolls, etc.	£2,500 0 0

(The road and bridge first mentioned were sold to the Brantford Road Company in 1850, but were reassumed by an Order-in-Council in 1863. The second road was later sold to Middlesex County.)

The following are the public roads and bridges sold to municipal bodies during the years 1841-1865:—

The Kingston and Napanee Road	£15,400 0 0
The Port Hope and Rice Lake Road	4,600 0 0
The Delaware Bridge, the Westminster Bridge, the London and Port Stanley Road, and the Road from London to the Eastern Boundary Line of the County of Middlesex, being part of the London and Brantford Road	4,500 0 0
The West Gwillimbury Road	550 0 0
*The Queenston and Grimsby Road	1,000 0 0
The Chatham Bridge	500 0 0
The Trent Bridge	750 0 0
The Chippewa Cut and Bridge, in the Township of Willoughby, County of Welland	5 0
The Dundas and Waterloo Road. Annual Rent	$1,250 00
The Yonge Street or North Toronto Road to Holland Landing, the East York Road, including the Don Bridge and Road over same, the Dundas Street or West York Road, and the Lake Shore Road, with bridges, tolls, etc.	$72,500 00

Since Confederation Ontario has had its own Board. Commissioner or Department of Public Works. The Joint Stock Companies Act of 1859 remains in force to-day, in an amended form. In 1874 the County Council was given authority to take over township roads with exclusive jurisdiction over the same, and was obliged to maintain all bridges over one hundred feet in width within any incorporated village. Municipal Councils could still take toll to defray the expense of making or repairing plank, macadam or gravel roads, while tolls could also be farmed out

(43) Dominion of Canada Sessional papers (1867-8), Vol. 5. No. 8, pp. 116, 170, 171, 302, 318, 319, 514, 515, 582.

*(By Act of 1863 the Town of Niagara and the Townships of Gainsborough and Caistor in the County of Lincoln were exempted from all taxation arising out of the assumption of this road by the Corporation of Lincoln County.)

for not more than twenty-one years to contracting parties. In 1889 was passed an Act to facilitate the purchase of toll roads by municipalities: a board of three commissioners was appointed to examine into this question, to ascertain the value of such roads and if possible to purchase the same. On the completion of such purchases by the county or separated urban municipality all tolls on urban or county roads were abolished while provision was made for an annual maintenance fund by the County Council. In 1893 municipal councils were authorized to agree with owners of toll roads as to the expenditure of statute labour, and in the following year toll could be commuted by abutting freeholders or occupants. In spite of the endeavours made to arrive at a satisfactory solution of the toll road question, including the appointment of a commission to examine into the matter in 1895, a few toll roads in the hands of private companies are to be found in Ontario to-day. In other directions the highway situation has greatly improved and broadened in scope, the incipient county system formed largely for the purchase of toll roads, being put upon a sound basis by the Highway Improvement Act of 1901, which is in force at the date of writing.

ACKNOWLEDGMENT.

In connection with the securing of historical data for the above sketch, the Commission desires to express its appreciation of courtesies extended by the following gentlemen:—to Dr. A. G. Doughty, Dominion Archivist, for extracts from the Public Archives of Canada relative to land and roads in this Province (1791-1842), the complete collection of which forms an appendix supplementary to the report; to Dr. Alexander Fraser, Provincial Archivist, for assistance in locating important works of reference; and to Professor O. D. Skelton, of Queen's University, for valuable suggestions with regard to the treatment of the subject.

APPENDIX No. 11:—TOWNSHIP ROADS—STATUTE LABOUR AND EXPENDITURES.

Townships	Days on statute roll	Days worked out	Days commuted	Rate of commutation	Total commutation	No. of road divisions	No. of path-masters or supts.	Statute labour commuted.	Statute labour abolished	No. of assessors	Amount paid assessors, 1913 (each)	Expenditures, roads and bridges, 1913, exclusive of Stat. Lab. Com.
				$ c.	$ c.						$ c.	$ c.
Brant:												
Brantford	8,753	4,438	4,315	1 00	4,315 00	109	109	parly comu.	1904 & '10	2	500 00	14,503 57
Burford	5,062	4,470	592	1 00	592 00	144	144	no	no	2	140 00	11,454 77
Dumfries, S.	3,104	2,402	702	1 00	702 00	56	61	Since 1902	no	2	160 00	4,750 00
Oakland	1,275	850	425	1 00	425 00	18	18	yes	yes	5	50 00	935 00
Onondaga	1,352	2,275	93	1 00	87 00	37	37	partly	.....	1	40 00	4,989 49
Bruce:												
Albemarle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amabel	2,480	2,380	100	1 00	100 00	84	84	no	no	1	100 00	4,278 89
Arran	2,572½	2,496½	76	1 00	76 00	70	70	no	no	1	81 00	9,800 00
Brant	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bruce	4,050	3,873	177	1 50	218 00	76	76	no	no	1	100 00	7,737 40
Carrick	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Culross	3,000	.....	none	1 00	none	63	63	no	no	1	70 00	3,148 00
Eastnor	1,607	1,441½	165½	1 00	148 55	68	67	.....	no	1	70 00	2,633 09
Elderslie	.....	.....	69	1 50	103 85	66	66	no	no	1	75 00	9,947 17
Greenock	3,220	3,142	78	1 00	78 00	79	79	no	no	1	85 00	6,233 11
Huron	3,581	3,223½	357½	75	274 11	78	78	in 1898	no	1	70 00	8,550 88
Kincardine	4,274	4,215	59	1&1 25	72 25	70	70	no	no	1	70 00	7,749 98
Kinloss	2,504	2,386	118	75	88 50	55	55	.....	no	1	55 00	3,611 49
Lindsay	667	478	.....	.....	.....	31	31	.....	.....	1	75 00	2,006 80
St. Edmonds	.....	.....	.....	.....	.....	.....	.....	1911	1911	1	65 00	1,000 00
Saugeen	1,814	1,706½	107½	1 00	107 50	56	56	no	no	1	75 00	1,960 00
Carleton:												
Fitzroy	1,947	.....	.....	1 00	.....	4	none	wholly	yes 1902	1	85 00	2,565 00
Gloucester	11,583	none	11,583	50	616 00	5	3	1901	1901	1	350 00	4,681 89
Goulburn	none	none	none	none	none	4	4	no	1909	1	140 00	4,314 00
Gower, N.	315	none	.....	.....	1,009 73	2	2	1909	1909	1	80 00	1,597 50
Huntley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March	.....	.....	.....	.....	.....	4	4	no	yes 1909	1	40 00	1,939 68
Marlborough	1,528	1,302	126	1 50	184 00	40	40	no	no	1	65 00	798 00
Nepean	.....	.....	.....	1 00	.....	.....	1	1904	no	1	500 00	5,000 00
Osgoode	6,792	2,044	4,748	50	2,374 00	9	28	partly	yes 1902	1	180 00	10,353 68
Torbolton	780	671	109	1 00	109 00	20	20	no	no	1	30 00	510 77

Dufferin:												
Amaranth	3,300	3,255	45	1 00	45 00	121	121	no	no	1	90 00	7,543 49
Garafraxa, E.	1,608	1,584	24	75	18 00	76	76	no	no	1	60 00	2,852 00
Luther, E.	1,619½	1,569	50½	1 00	50 50	50	50	no	no	1	70 00	11,215 66
Melancthon	3,647	3,260	387	1 00	387 00	98	98	1908	no	1	125 00	14,392 13
Mono	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mulmur	5,823	2,788	35	1 00	35 00	115	115	1898	no	1	110 00	2,860 68
Dundas:												
Matilda	6,000	5,700	150	1 00	75 00	94	94	no	no	1	45 00	.....
Mountain	3,417	3,269	248	1 00	248 00	66	66	no	no	1	90 00	4,128 45
Williamsburg	4,972	4,849½	122½	1 00	122 50	60	64	no	no	1	75 00	8,211 41
Winchester	5,984	5,438	546	1 00	546 00	73	77	no	no	1	100 00	8,984 77
Durham:												
Cartwright	1,773½	.....	.....	1 20	.....	58	58	.....	no	1	51 00	1,628 09
Cavan	3,258	3,013	245	1 00	245 00	61	61	yes 1912	.....	1	115 00	4,023 00
Clarke	4,069	.....	450	1 00&1 25	480 00	105	105	.....	no	1	115 00	6,961 61
Darlington	4,130	.....	90½	1 00	90 50	129	129	no	no	1	120 00	6,943 10
Hope	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manvers	3,554	3,238	316	1 00	316 00	114	114	no	no	1	100 00	2,473 66
Elgin:												
Aldborough	4,332	3,959½	372½	1 00	372 50	119	119	no	no	1	110 00	11,364 78
Bayham	2,597	2,050	547	1 00	547 00	118	118	.....	.....	1	140 00	4,494 14
Dorchester, S.	2,616	.....	2,616	1 00&.50	1,340 00	4	4	.....	yes 1902	1	50 00	6,046 00
Dunwich	4,000	3,700	300	.....	.....	172	172	no	no	1	107 00	8,265 00
Malahide	4,939	4,367	572	1 00	572 18	150	150	.....	.....	1	175 00	8,768 53
Southwold	3,186	2,398	788	1 00	788 00	147	147	no	no	1	125 00	15,886 00
Yarmouth	5,911	none	all	75	4,433 25	101	101	1907	yes	2	200 00	21,000 00
Essex:												
Anderdon	2,232	.....	.....	1 00	.....	33	33	no	no	1	48 00	.....
Colchester, N.	2,806	1,466½	60	1 00	.....	24	24	no	no	1	70 00	5,564 93
Colchester, S.	5,208	4,200	1,008	.50 & .65	623 00	26	32	no	no	1	100 00	3,913 78
Gosfield, N.	2,641	2,514	127	1 00	127 00	45	45	no	no	1	75 00	6,305 39
Gosfield, S.	none	.....	.....	.....	.....	.....	.....	.....	yes 1902	1	90 00	6,621 99
Maidstone	none	.....	none	.....	2,305 96	5	5	.....	yes 1913	1	85 00	1,659 43
Malden	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	60 00	2,640 14
Mersea	5,188	4,847	341	1 00	341 00	85	85	no	no	1	120 00	6,000 00
Rochester	1,859	none	1,859	50	950 50	4	4	1911	yes 1911	1	85 00	5,567 63
Sandwich, E.	6,500	5,000	1,500	1 00	1,500 00	26	26	no	no	2	140 00	3,000 00
Sandwich, S.	3,116	2,797½	318½	1 00	318 50	33	33	no	no	1	55 00	7,632 72
Sandwich, W.	2,500	1,500	.....	1 00	.....	26	26	no	no	1	45 00	5,475 00
Tilbury, N.	1,914	1,209	605	.25 .50 1 00	164 75	30	30	partly	no	1	75 00	2,519 70
Tilbury, W.	1,980	1,821	159	1 00	159 00	32	32	.....	.....	1	65 00	797 59
Pelee Island	1,835	.....	1,835	75	1,376 25	13	4	.....	yes 1898	1	65 00	3,000 00

TOWNSHIP ROADS—STATUTE LABOUR AND EXPENDITURES.—Continued.

Townships	Days on statute roll	Days worked out	Days commuted	Rate of commutation	Total commutation	No. of road divisions	No. of path-masters or supts.	Statute labour commuted	Statute labour abolished	No. of assessors	Amount paid assessors, 1913 (each)	Expenditures, roads and bridges, 1913, exclusive of Stat.Lab. Com.
Frontenac:				$ c.	$ c.						$ c.	$ c.
Barrie	431	337	94	1 00	300 00	24	24	no	no	1	18 50	142 59
Bedford	1,211	1,107	none	none	none	62	62	no	no	1	45 00	3,229 14
Clarendon & Miller	780	697	83	1 00	83 00	40	40	no	no	1	32 00	100 00
Hinchinbrooke	abolish'd	.....	abolished	.....	.....	.....	4	no	yes 1912	1	50 00	3,306 25
Howe Island	384	357	27	1 00	27 00	6	6	no	yes 1914	1	8 00	233 00
Kennebec	.....	.....	830	75	622 50	4	4	1913	no	1	40 00	182 00
Kingston	2,800	.....	2,800	75	2,100 00	82	82	.....	yes 1912	1	76 50	6,175 96
Loughborough	2,016	none	all	60	1,209 60	16	16	wholly 1912	yes 1912	1	100 00	2,195 74
Olden	.....	.....	.....	.....	.....	.....	4	wholly	yes 1910	1	60 00	1,587 57
Oso	819	685	134	1 00	134 00	43	41	no	no	1	50 00	1,150 00
Palmerston	637	487	150	1 50	70 00	40	35	no	no	1	45 00	161 17
Pittsburg	2,471	2,127	344	1 00	344 00	57	57	no	no	1	50 00	2,605 85
Portland	.....	.....	.....	.....	.....	2	1	.....	yes 1908	1	60 00	5,538 54
Storrington	1,320	.....	1,320	75	1,014 00	66	66	1907	.....	1	65 00	4,900 00
Wolfe Island	1,915	1,762	153	1 00	.....	55	55	none	no	1	50 00	3,537 99
Glengarry:												
Charlottenburg	5,014	5,014	.....	75	3,760 00	4	.....	wholly	wholly	1	295 00	9,665 85
Kenyon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lancaster	3,633	3,537	96	.75 & 1 00	88 88	53	55	no	no	1	90 00	3,535 22
Lochiel	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grenville:												
Augusta	3,468	3,327	141	75	105 75	64	64	.....	no	2	85 00	5,540 00
Edwardsburg	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gower, S.	1,085	1,068	17	75	12 75	24	24	.....	no	1	40 00	1,126 59
Oxford-on-Rideau	3,908	.....	171½	1 00	171 50	70	70	no	no	2	100 00	1,758 67
Wolford	2,204	1,167	1,037	.65, .75, .80	706 30	32	34	partly	no	1	60 00	290 41
Grey:												
Artemesia	3,200	3,150	50	.75 & 1 00	50 00	82	82	no	no	1	95 00	3,754 93
Bentinck	1,650	1,500	150	1 00	150 00	4	89	no	no	1	90 00	6,360 73
Collingwood	4,360	.....	492	1 00	492 00	100	100	no	no	1	95 00	10,654 10
Derby	.....	.....	.....	.....	.....	4	.....	.....	yes 1902	1	75 00	4,927 19
Egremont	3,500	3,425	75	1 00 & 1 50	90 00	87	87	in villages	no	1	140 00	2,659 57
Euphrasia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glenelg	2,168	2,062	17½	75	12 93	86	85	partly	no	1	90 00	4,563 66

Holland												
Keppel	3,483	3,038	344	75	258 00	154	152	partly	no	2	110 00	4,306 44
Normanby			none	none	none	4	110	no	no	1	90 00	15,800 00
Osprey	2,237	2,156	81	1 00	81 00	74	74	no	no	1	80 00	4,041 00
Proton	4,000	3,900	100	1 00	100 00	96	96	no	no	1	90 00	6,142 79
St. Vincent	3,000			1 50	208 00	104	104	no	no	1	85 00	not known
Sarawak	863	420	443	1 00	443 00	20	20	partly	no	1	40 00	796 97
Sullivan	3,398	3,292	none	1 00	none	101	101	no	no	2	90 00	3,463 48
Sydenham	abolish'd						4	no	yes 1913	1	140 00	7,767 46
Haldimand:												
Canborough	1,285	1,080	205	75	153 75	38	38	1913	no	1	30 00	1,307 69
Cayuga, N.	2,334	1,250		1 00		40	40	1912	no	1	55 00	500 00
Cayuga, S.	728	500	228	75	171 00	24	24	partly 1912	no	1	50 00	123 27
Dunn	1,099½	789½	310	1 25	387 50	20	20	partly	1912	1	25 00	100 00
Moulton	2,278	2,066	212	1 00	212 00	72	72	partly 1912-3	no	1	50 00	600 59
Oneida	2,033	1,317	716	1 00	716 00	39	39	yes 1912	no	1	50 00	978 00
Rainham			509	1 00	509 00	32	32	partly 1913	no	1	35 00	500 00
Seneca	1,790		406	1 00	406 00	64	64	1912	no	1	60 00	
Sherbrooke	444	444		1 00		8	8			1	20 00	420 00
Walpole	4,700		4,700	75	3,525 00	81	81	wholly 1909	no	1	125 00	8,729 18
Haliburton:												
Anson & Hindon												
Cardiff	424	385	39	1 00	39 00	40	40	no	no	1	25 00	35 50
Dysart						9	18	1899	1899	1	107 00	6,987 00
Glamorgan	369	279	15	1 00	15 00	25	23	no	no	1	30 00	38 05
Lutterworth	343	295	48	1 00	48 00	34	34	no	no	1	20 00	85 00
Minden	691	629	62	1 00	62 00	51	51	no	no	1	42 00	300 00
Monmouth	1,200			1 00		32	32	every year	no	1	50 00	
Sherborne												
Snowdon												
Stanhope	386	357	29	1 00	26 00	23	23	no	no	1	28 00	82 24
Halton:												
Esquesing	3,497		3,497	1 00	3,497 00	35	35		abol. 1912	2	175 00	13,406 38
Nassagaweya	2,440	1,659	781	1 00	770 00	57	61	partly 1912		1	120 00	1,756 00
Nelson			all	75	2,779 50			1895		1	200 00	7,217 74
Trafalgar	5,475	3,215	2,349	1 00	2,349 00	11	11	no	no	2	85 00	8,661 45
Hastings:												
Bangor, Wicklow & McClure	315	205	110	1 00	110 00	37	37	no	no	1	60 00	585 00
Carlow	553	418	135	1 00	135 00	14	14	no	no	1	35 00	375 00
Dungannon	520	347½	172½	1 50	258 75	44	43 & 5	no	no	1	45 00	505 27
Elzevir & Grimsthorpe	760	760				41	41	no	no	2	96 00	1,025 21
Faraday												
Hungerford	4,400	4,108	292	1 00	292 00	125	125	no	no	2	160 00	1,597 26
Huntingdon												
Limerick	383		383	1 00	383 00		1	wholly 1911	1911	1	30 00	500 00
Madoc	2,200		2,200	75	1,650 00	4	4	1912	1911	2	65 00	2,000 00

TOWNSHIP ROADS—STATUTE LABOUR AND EXPENDITURES.—Continued.

Townships	Days on statute roll	Days worked out	Days commuted	Rate of commutation	Total commutation	No. of road divisions	No. of path-masters or supts.	Statute labour commuted	Statute labour abolished	No. of assessors	Amount paid assessors, 1913 (each)	Expenditures, roads and bridges, 1913, exclusive of Stat. Lab. Com.
				$ c.	$ c.						$ c.	$ c.
Marmora & Lake	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mayo	390	240	150	1 00	150 00	12	12	.....	.....	.....	.....	.....
Monteagle & Herschel	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	45 00	675 74
Rawdon	3,464	3,000	464	1 50	696 00	100	100	partly about 1904	no	1	80 00	1,249 45
Sidney	5,024	all	5,024	75	3,868 50	.....	1	wholly	1900	2	170 00	5,649 09
Thurlow	4,624	3,064	1,560	65	1,014 00	85	78	1913	no	2	85 00	2,475 00
Tudor & Cashel	832	519½	312½	1 00	283 07	40	40	no	no	1	50 00	1,175 84
Tyendinaga	4,296	4,202½	93½	1 00	93 50	96	96	no	no	2	120 00	2,380 85
Wollaston	799	451	348	1 00	.....	38	38	no	no	1	55 00	1,120 00
Huron:												
Ashfield	3,453	3,297	156	75	117 00	134	134	optional	no	1	85 00	7,031 81
Colborne	1,801	1,705	96	1 00	96 00	70	70	no	no	1	60 00	3,598 80
Goderich	2,292	2,231	61	1 00	61 00	50	50	no	no	1	60 00	3,052 36
Grey	4,130	4,012	118	1 00	118 00	87	87	no	no	1	110 00	7,058 68
Hay	2,900	2,867	130	75	130 90	85	85	.....	no	1	90 00	5,914 14
Howick	4,204	3,722	482	60	430 30	121	121	no	.....	1	120 00	7,778 81
Hullett	2,797	.....	145	1 00	145 00	105	104	.....	no	1	90 00	8,694 00
McKillop	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris	3,168	3,132	36	1 00	36 00	104	104	no	no	1	80 00	23,131 06
Stanley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stephen	4,364	4,364	none	.....	.....	88	88	no	no	1	90 00	5,483 05
Tuckersmith	2,980	2,680	300	1 00	324 00	87	87	partly 1913	no	1	80 00	4,947 18
Turnberry	2,391	.....	.....	75	42 00	63	63	.....	no	1	65 00	8,342 82
Usborne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wawanosh, E.	1,792	1,726	66	1 00	66 00	76	76	no	.....	1	65 00	1,947 08
Wawanosh, W.	1,866	1,730	132	1 00	132 00	79	79	no	no	1	65 00	3,145 54
Kent:												
Camden	2,964	2,833	131	1 00	131 00	75	75	.....	.....	1	65 00	5,000 00
Chatham	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dover	3,864	.....	3,864	40	1,434 80	66	63	wholly 1909	no	1	150 00	1,000 00
Harwich	5,431	4,682	749	1 00	700 00	130	130	partly	no	1	200 00	14,000 00
Howard	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Orford	2,314	2,147	167	1 00	167 00	66	66	.....	no	1	95 00	1,934 62
Raleigh	3,375	3,105	270	1 00	270 00	75	75	.....	.....	1	100 00	2,350 00

Romney	5,355	4,727	628	50	314 00	21	21	.....	.....	1	80 00	3,598 47
Tilbury, E.	4,076	442	3,634	60	2,180 40	5	5	1904	no	1	135 00	4,112 10
Zone	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lambton:												
Bosanquet	3,203	2,316	887	1 00	882 00	31	31	partly in 1913	no	1	100 00	8,793 14
Brooke	3,777	3,595	182	1 00	182 00	157	157	no	no	1	.....	8,493 30
Dawn	3,820	3,800	20	1 00	20 00	117	117	no	no	1	85 00	3,800 00
Enniskillen	5,415	3,188	1,227	1 00	1,227 00	76	76	partly	.....	1	175 00	15,000 00
Euphemia	2,147	1,910	237	75	265 00	68	68	.....	no	1	60 00	3,900 00
Moore	5,019	4,450	629	70	685 30	83	88	1904	no	1	125 00	4,018 64
Plympton	2,980	2,940	40	1 00	40 00	90	90	no	1909	1	68 00	9,094 53
Sarnia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sombra	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Warwick	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lanark:												
Bathurst	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Beckwith	1,547	1,482	65	1 00	65 00	38	38	no	no	1	875 00	867 90
Burgess, N.	608	591	17	1 00	17 00	27	27	no	no	1	42 00	240 00
Dalhousie & Sherbrooke, N	1,540	1,474	66	1 00	66 00	74	74	.....	no	1	50 00	1,266 50
Darling	500	476	24	1 00	24 00	16	16	no	no	1	22 00	224 42
Drummond	2,008	1,750	258	1 00	258 00	47	47	no	no	1	60 00	988 67
Elmsley, N.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lanark	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lavant	475	343	132	1 00	80 00	20	17	no	no	1	30 00	93 63
Montague	2,278	.....	all	75	1,708 50	4	4	wholly 1911	1911	1	75 00	1,467 22
Pakenham	1,549	1,354	195	1 00	195 00	42	42	.....	no	1	60 00	1,772 72
Ramsay	2,350	2,301½	48½	1 00	48 50	54	54	no	no	1	85 00	8,500 00
Sherbrooke, S.	700	630	70	1 00	70 00	24	24	no	no	1	35 00	65 00
Leeds:												
Bastard & Burgess, S.	3,063	.....	3,063	75	2,297 75	5	5	wholly 1912	.....	3	105 00	48 00
Crosby, N.	1,278	1,007	271	75	203 25	51	51	no	no	1	60 00	656 92
Crosby, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elizabethtown	.....	.....	.....	90	.....	75	75	.....	.....	2	200 00	4,547 04
Elmsley, S.	778	482½	305½	88	244 40	24	24	no	no	1	25 00	527 91
Kitley	.....	.....	.....	.....	.....	.....	5	.....	abol. 1913	2	75 00	4,432 24
Leeds & Lansdowne, Front	2,200	1,837	363	1 00	363 00	72	72	no	no	2	120 00	12,619 47
Leeds & Lansdowne, Rear	3,521	.....	3,521	1 00	3,521 00	5	11	wholly 1901 partly since	yes	1	100 00	3,523 38
Yonge & Escott, Front	1,488	1,150½	337½	1 00	337 50	29	29	1910	.....	1	40 00	3,283 16
Yonge & Escott, Rear	1,334	1,089½	244½	1 00	244 50	22	22	no	no	1	45 00	3,284 29
Lennox & Addington:												
Adolphustown	709	.....	all	1 00	709 00	9	9	wholly 1912	1912	1	18 00	1,150 00
Amherst Island	940	860	80	75	62 00	16	16	1912, raised from 50c.	1912	1	25 00	900 00

TOWNSHIP ROADS—STATUTE LABOUR AND EXPENDITURES.—Continued.

Townships	Days on statute roll	Days worked out	Days commuted	Rate of commutation	Total commutation	No. of road divisions	No. of path-masters or supts.	Statute labour commuted	Statute labour abolished	No. of assessors	Amount paid assessors 1913 (each)	Expenditures, roads and bridges, 1913, exclusive of Stat. Lab.Com.
				$ c.	$ c.						$ c.	$ c.
Camden, E.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denbigh, Abinger	554	453	101	1 00	101 00	48	48 & 1	no	no	1	50 00	165 24
Ernesttown	1,910	1,838⅔	72⅔	90	865 46	70	70	no	no	1	80 00	5,773 20
Fredericksburg, N.	1,148	1,052	96	1 00	96 00	36	36	no	no	1	35 00	600 00
Fredericksburg, S.	870	840	307	85	.....	20	20	along Co. Rd.	no	1	20 00	1,002 00
Kaladar, Anglesea	816	766	50	1 00	.....	51	51	no	no	1	60 00	833 75
Richmond	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sheffield	3,055	244	641	50	320 50	73	73	no	no	1	75 00	1,802 67
Lincoln:												
Caistor	1,999	1,990	9	75	6 75	78	78	.....	no	1	45 00	3,000 00
Clinton	.....	.....	.....	.....	.....	.....	4	.....	1906	1	110 00	7,547 10
Gainsborough	3,200	2,000	16	1 00	16 00	113	113	no	no	1	75 00	2,000 00
Grantham	3,098	1,727	1,371	75	1,028 25	40	41	yes 1913	no	1	125 00	8,919 37
Grimsby, N.	2,908	.....	all	75	2,181 00	2	2	1892	no	1	106 75	3,160 82
Grimsby, S.	1,627	.....	1,627	80	1,301 60	10	10	wholly 1912	.....	1	57 70	2,058 00
Louth	.....	.....	.....	75	3,244 90	4	12	wholly	no	1	102 00	2,371 99
Niagara	.....	.....	all	50	1,000 00	.....	1	1903	1903	1	70 00	7,787 00
Middlesex:												
Adelaide	2,260	2,226	572	1 00	572 00	40	40	partly 1911	.....	1	50 00	4,921 26
Biddulph	2,755	2,500	255	85	220 00	59	59	1904	no	1	85 00	5,892 00
Caradoc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware	1,700	1,300	400	1 00	400 00	53	53	1913	no	1	50 00	5,077 72
Dorchester, N.	3,680	2,555	1,125	1 00	1,125 00	84	84	.....	.....	1	130 00	3,200 00
Ekfrid	2,241	1,579	662	75	496 50	85	85	no	no	1	95 00	5,000 00
Lobo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
London	6,512	5,248	1,264	1 00	1,264 00	156	156	no	no	2	361 20	19,965 17
McGillivray	3,792	3,715	77	1 00	77 00	95	95	no	no	1	108 30	5,241 85
Metcalfe	1,410	742	668	1 00	668 00	56	55	no	no	1	59 00	4,300 00
Mosa	2,144	1,823½	320½	1 00	320 50	69	69	no	no	1	70 00	6,600 00
Nissouri, W.	3,265	2,862	403	1 00	402 75	88	88	1910	no	1	100 00	8,801 23
Westminster	.....	.....	6,666	45	3,000 00	4	4	.....	yes 1902	1	175 00	11,862 73
Williams, E.	2,258	.....	100	1 00	100 00	65	65	.....	.....	1	40 00	3,414 00
Williams, W.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Norfolk:												
Charlotteville	3,550	3,210	340	75	609 40	86	86	no	no	2	55 00	1,813 00
Houghton	1,300	1,150	150	1 00	150 00	68	68	partly	no	1	60 00	2,559 69
Middleton	3,206	.....	191¼	1 00	.....	103	101	no	no	1	100 00	4,458 67
Townsend	4,770	4,330	440	1 00	.....	105	105	no	no	2	120 00	5,904 25
Walsingham, N.	2,236	1,792	444	1 00	444 00	65	65	no	no	1	65 00	2,617 22
Walsingham, S.	2,002	1,530¾	471¼	1 00	720 50	52	52	.....	no	1	75 00	6,730 54
Windham	4,194	4,005	189½	1 00	189 50	101	100	.....	.....	1	124 00	5,822 45
Woodhouse	2,820	2,749	71	1 00	71 00	56	56	no	no	1	100 00	10,695 00
Northumberland:												
Alnwick	880	860	20	1 00	20 00	31	31	no	no	1	42 00	805 00
Brighton	3,427	3,089	338	1 00	338 00	86	92	no	no	2	85 00	3,888 28
Cramahe	3,260	2,143	1,117	1 00	1,117 50	105	105	partly 1912	no	1	75 00	3,035 00
Haldimand	4,200	3,600	600	1 00	600 00	105	105	.....	.....	1	100 00	6,820 00
Hamilton	4,947	.....	440	75	1,135 06	77	77	no	no	1	115 00	12,289 87
Monaghan, S.	1,130	1,060	70	1 00	.....	.....	35	.....	.....	1	40 00	1,487 24
Murray	3,920	3,700	220	1 00	200 00	100	100	.....	1904	1	100 00	4,584 97
Percy	3,217	2,469	748	75	619 25	100	100	1900	no	1	75 00	2,801 50
Seymour	2,426	2,026	400	1 00	400 00	140	141	no	no	1	125 00	8,607 44
Ontario:												
Brock	3,583	3,013	570	1 00	480 50	122	122	.....	no	1	140 00	4,155 00
Mara	2,975	2,700	275	1 00	275 00	74	73	no	no	1	125 00	12,611 29
Pickering	466¼	3,921½	739¾	1 00	739 75	78	78	5 vill. 1900	no	1	185 00	12,222 08
Rama	1,075	996	79	1 00	79 00	40	40	no	no	1	75 00	2,475 00
Reach	4,099	3,864	235	1 00	235 00	84	84	no	no	1	108 50	5,765 00
Scott	1,844	1,804¾	39¼	1 00	39 25	.....	58	no	no	1	100 00	3,203 99
Scugog	546	540	6	1 00	6 00	12	12	no	no	1	25 00	626 20
Thorah	1,822	1,408½	239	1 00	239 00	48	50	no	no	1	62 00	5,360 06
Uxbridge	2,200	2,070	130	1 00	130 00	71	71	no	no	1	90 00	2,312 17
Whitby, E.	3,816	1,761	2,053	75	1,541 25	37	37	partly	no	1	100 00	14,486 35
Whitby	2,241	1,406	831	1 00	831 00	19	19	no	no	1	120 00	3,899 54
Oxford:												
Blandford	2,695	2,065½	609½	1 00	569 75	45	45	partly	no	1	60 00	2,967 91
Blenheim	5,474	3,918	1,556	.75 & 1 00	1,254 00	104	104	partly	.....	2	240 00	6,655 58
Dereham	6,065	4,852	1,213	1 25	1,516 00	51	51	.....	.....	1	175 00	6,400 00
Nissouri, E.	3,086	all	100	1 00	100 00	88	88	no	no	1	70 00	7,913 00
Norwich, N.	.....	.....	.....	75	2,678 00	48	48	wholly 1895	yes	1	100 00	3,567 22
Norwich, S.	3,488	2,568	920	1 00	765 00	54	50	partly	no	1	75 00	4,673 00
Oxford, E.	2,843	2,379	464	1 00	464 00	66	66	.....	no	1	87 00	6,000 00
Oxford, N.	1,571	1,354	117	1 00	.....	47	47	partly 1904	no	1	70 00	1,500 00
Oxford, W.	3,231	2,711½	519½	75	460 25	36	36	no	.....	1	80 00	3,417 37
Zorra, E.	.....	.....	.....	.....	.....	.....	.....	.....	1913	2	120 00	1,350 00
Zorra, W.	3,518	3,455	63	1 00	63 00	85	85	no	no	1	80 00	4,794 09

TOWNSHIP ROADS—STATUTE LABOUR AND EXPENDITURES.—Continued.

Townships	Days on statute roll	Days worked out	Days commuted	Rate of commutation	Total commutation	No. of road divisions	No. of path-masters or supts.	Statute labour commuted	Statute labour abolished	No. of assessors	Amount paid assessors, 1913 (each)	Expenditures, roads and bridges, 1913, exclusive of Stat.Lab.Com.
Peel:												
Albion	2,400	1,913	487	1 00	487 00	86	86	Co. Road	no	5	100 00	4,800 00
Caledon	4,104	3,409	695	1 00	626 65	106	106	.....	no	2	155 00	5,721 45
Chinguacousy	4,011	3,096	915	1 00	915 00	81	81	about 1908	no	2	80 00	10,000 00
Toronto	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Toronto Gore	.....	.....	.....	.....	.....	.....	.....	.....	1898	1	40 00	2,863 07
Perth:												
Blanshard	.....	.....	.....	.....	.....	62	62	wholly	yes	1	90 00	7,338 43
Downie	.....	.....	.....	.....	.....	70	70	wholly 1902	yes 1902	1	90 00	12,035 60
Easthope, N.	2,701	2,579	122	1 00	122 00	57	57	.....	.....	1	85 00	4,555 39
Easthope, S.	1,899	1,865½	33½	1 25	41 87	33	33	partly 1895	no	1	60 00	2,482 48
Ellice	3,005	2,848	157	95	154 45	78	78	partly	no	1	85 00	5,528 93
Elma	259½	174	85	1 00	85 00	98	98	.....	no	1	100 00	5,058 36
Fullarton	.....	.....	.....	.....	.....	.....	89	.....	yes 1902	1	80 00	6,200 02
Hibbert	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Logan	.....	.....	.....	.....	.....	120	120	abolished	1903	1	90 00	9,567 49
Mornington	3,158	3,158	none	1 00	none	63	63	no	no	1	95 00	7,705 59
Wallace	2,866	2,821	45	1 00	45 00	5	105	optional	no	1	58 00	4,287 54
Peterborough:												
Asphodel	1,728	1,678	150	1 00	150 00	20	78	no	no	1	45 00	2,100 00
Belmont & Methuen	1,504	1,102	none	1 00	none	96	86	no	no	1	75 00	1,551 51
Burleigh	514	514	none	.....	.....	25	25	.....	.....	1	49 00	730 89
Chandos	650	587	63	1 00	63 00	49	49	no	no	1	40 00	88 24
Douro	1,360	864	496	1 00	496 00	79	78	partly	.....	1	70 00	1,018 48
Dummer	1,813	1,532	281	1 00	.....	90	90	no	no	1	60 00	.....
Ennismore	811	775	36	1 00	36 00	42	42	.....	no	1	35 00	800 00
Galway & Cavendish	170	.....	.....	.....	none	25	25	no	no	1	30 00	250 00
Harvey	1,200	1,100	.....	1 00	.....	55	55	no	no	1	42 00	991 06
Monaghan, N.	2,136	.....	all	1 00	2,136 00	6	6	years ago	.....	1	70 00	1,500 00
Otonabee	3,111	2,567	544	1 00	544 00	86	86	.....	.....	1	82 00	7,359 39
Smith	3,190	2,798	392	1 00	392 00	92	87	no	no	1	100 00	3,777 81
Prescott:												
Alfred	2,048	1,964	84	1 00	84 00	45	45	1913	no	1	90 00	.....
Caledonia	1,770	1,695	75	1 00	75 00	72	72	no	no	1	75 00	1,146 90

Hawkesbury, E.	2,986	2,229	757	1 00	757 00	91	91	1902 & 1910	no	1	100 00	8,362 00
Hawkesbury, W.	1,500	.....	all	1 00	1,500 00	20	20	all	yes	1	55 00	1,600 00
Longueuil	880	800	80	1 00	80 00	21	21	no	no	1	30 00	220 00
Plantagenet, N.	2,392	.....	2,392	1 00	2,392 00	84	none	1913 wholly	.....	1	90 00	2,392 00
Plantagenet, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Edward:												
Ameliasburg	3,800	3,568	232	1 00	232 00	44	44	no	no	1	75 00	1,230 00
Athol	2,497	2,447½	49½	50	24 75	31	31	no	no	1	20 00	448 69
Hallowell	6,729	5,217	1,512	40	604 80	51	51	no	no	1	82 00	1,598 49
Hillier	2,528	2,248	280	75	210 00	31	32	no	no	1	40 00	567 78
Marysburg, N.	2,602	none	2,602	50	1,301 00	23	26	1910 wholly	no	1	37 00	.....
Marysburg, S.	1,889	1,889	.....	75	.....	33	34	no	no	1	40 00	600 00
Sophiasburg	3,173	2,763	410	75	308 02	40	37	partly	no	1	70 00	1,412 81
Renfrew:												
Admaston	1,354	.....	.....	.....	.....	66	66	.....	.....	1	50 00	5,190 00
Algona, S.	405	401	4	1 00	4 00	36	36	no	no	1	30 00	61 90
Alice & Fraser	1,025	987	4	1 00	4 00	75	75	no	no	1	60 00	245 16
Bagot & Blythfield	.....	.....	.....	.....	.....	32	3	.....	1912	1	55 00	1,682 82
Bromley	1,212	1,006	206	75	155 00	54	54	.....	.....	1	60 00	2,776 62
Brougham	204	196	8	1 00	8 00	20	20	no	no	1	30 00	none
Brudenell & Lyndoch	712	651	27	1 00	.....	40	40	no	no	1	40 00	125 00
Grattan	606	568	.....	.....	.....	56	56	no	no	1	65 00	250 00
Griffith & Matawatchan	250	241	9	1 00	9 00	1 to 20	20	no	no	1	40 00	bdgs. 10 00
Hagarty & Richards	945	884	61	1 00	31 00	63	63	no	no	1	50 00	606 50
Head, Clara & Maria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horton	1,265	1,190½	74½	1 00	74 50	35	36	no	no	1	40 00	1,300 00
McNab	.....	.....	2,615	1 00	2,615 00	4	10	1912	1912	1	125 00	3,547 00
Pembroke	430	374	56	1 00	56 00	7	7	no	no	1	50 00	229 57
Petewawa & McKay	419	331	88	1 00	88 00	23	25	.....	.....	1	28 00	50 05
Radcliffe	323	263	60	1 00	.....	15	15	.....	no	1	40 00	136 25
Raglan	369	.....	333	1 00	.....	30	30	.....	.....	1	25 00	43 00
Rolph, Buchanan & Wylie	606	520	146	1 00	.....	32	32	no	no	1	47 50	28 00
Ross	1,503	1,294	209	1 00	209 00	53	53	1907	no	1	50 00	2,785 85
Sebastopol	314½	288½	26	1 00	26 00	26	26	no	no	1	28 00	44 15
Sherwood, Jones & Burns	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stafford	.....	.....	.....	.....	.....	5	5	wholly	1903	1	30 00	1,300 00
Westmeath	2,476	none	all	1 00	2,476 00	5	5	1902	1902	1	100 00	2,438 39
Wilberforce	1,322	1,201	121	1 00	121 00	70	70	no	no	1	65 00	550 00
Russell:												
Cambridge	2,553	2,447	106	1 00	106 00	30	30	.....	no	1	85 00	7,387 00
Clarence	2,231	1,827	404	1 00	404 00	10	138	no	no	1	100 00	5,498 50
Cumberland	4,634	3,958	676	1 00	676 00	83	83	1911	no	1	215 00	5,007 62
Russell	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TOWNSHIP ROADS—STATUTE LABOUR AND EXPENDITURES.—Continued.

Townships	Days on statute roll	Days worked out	Days commuted	Rate of Commutation	Total commutation	No. of road divisions	No. of path-masters or supts.	Statute labour commuted	Statute labour abolished	No. of assessors	Amount paid assessors, 1913 (each)	Expenditures, roads and bridges, 1913, exclusive of Stat. Lab. Com.
Simcoe:				$ c.	$ c.						$ c.	$ c.
Adjala	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Essa	.....	.....	.....	.....	.....	.....	.....	1904	1906	1	116 00	6,000 00
Flos	3,586	2,524	1,062	.75 & 1 00	922 50	89	89	.....	part '94-'98	1	130 00	1,653 14
Gwillimbury, W.	2,512	1,889	623	75	468 25	60	60	partly 1902	no	1	75 00	3,200 00
Innisfil	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Matchedash	387	333	54	1 00	54 00	20	20	no	no	1	55 00	493 38
Medonte	3,115	2,265	850	.75 & 1 00	638 00	115	115	partly	no	1	120 00	4,544 05
Nottawasaga	10,406	4,045	1,158	80	926 40	147	147	partly	no	1	135 00	5,000 00
Orillia	.....	.....	.....	.....	.....	7	7	no	1900	1	165 00	5,168 98
Oro	3,658	2,900	763	1 00	763 25	121	120	.....	.....	1	125 00	2,192 68
Sunnidale	2,446	2,150	296	1 00	296 00	105	105	partly	no	1	115 00	5,658 61
Tay	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tecumseh	.....	.....	.....	.....	.....	6	6	.....	1912	1	120 00	6,800 00
Tiny	4,027	3,230	797	40	318 80	63	63	partly 1906	no	1	145 00	2,929 20
Tossorontio	1,568	1,427	141	50	70 50	42	42	.....	.....	1	60 00	3,157 00
Vespra	2,375	1,834	541	1 00	541 00	85	85	Co. Rds.	no	1	128 00	5,217 29
Stormont:												
Cornwall	.....	.....	.....	.....	.....	.....	4	.....	1911	2	$70 & $40	11,000 00
Finch	3,971	3,797½	173½	1 00	173 50	50	55	no	no	1	120 00	7,858 07
Osnabruck	5,400	4,847	553	75	441 00	67	69	partly 1911	.....	2	132 00	6,226 00
Roxborough	4,892	4,774	118	1 00	118 00	69	73	no	no	1	75 00	3,000 00
Victoria:												
Bexley	746	634	112	1 00	112 00	32	32	no	no	1	65 00	800 00
Cardon	561	551	10	1 00	10 00	32	32	no	no	1	45 00	602 14
Dalton	411	392	none	1 00	none	23	23	.....	.....	1	25 00	312 70
Eldon	3,123	2,776½	347½	1 00 & .75	299 00	92	92	no	no	1	80 00	4,204 18
Emily	2,858	2,807	51	1 00 & 1 25	51 00	96	91	no	no	1	75 00	3,661 16
Fenelon	2,535	2,395	140	1 00	140 00	100	100	no	no	1	90 00	2,100 00
Laxton	592	503	89	1 00	89 00	42	42	.....	no	1	45 00	1,200 00
Mariposa	5,172	4,953	219	1 00	219 00	101	101	no	no	1	165 00	6,500 00
Ops	3,054	2,980½	73½	1 00	73 50	99	99	no	no	1	100 00	6,572 89
Somerville	1,629	1,252	377	75	282 75	70	70	no	no	1	85 00	1,981 34
Verulam	2,249	2,034	215	1 00	215 00	89	94	no	no	1	75 00	2,954 51
Waterloo:												
Dumfries, N.	2,838	1,513	1,325	1 00	1,325 00	34	34	1909	no	1	150 00	1,620 16
Waterloo	7,992	5,310	2,680	1 00	2,680 00	108	108	partly 1909	.....	5	309 00	14,742 95

Wellesley	4,989	4,000	989	1 00	989 00	99	99	.....	no	4	190 00	10,781 00
Wilmot	6,342	5,293	1,049	1 00	1,049 00	76	76	partly 1913	pt. Cy. rds.	3	195 00	14,976 62
Woolwich	4,316	2,716	1,600	1 00	1,600 00	77	77	1909	.....	6	214 00	10,900 52
Welland:												
Bertie	7,379	2,871	4,508	1 00	4,508 00	30	30	1913	no	1	225 00	2,460 66
Crowland	5,327	2,125	3,202	1 00	3,202 00	56	56	partly 1909	.....	1	120 00	6,213 26
Humberstone	4,278	3,261	1,017	75	762 75	69	69	no	no	1	140 00	2,308 77
Pelham	4,008	2,286	1,722	1 00	1,721 95	81	81	1912	.....	1	80 00	5,465 34
Stamford	7,660	.....	7,660	50	3,830 00	4	4	wholly 1906	yes 1914	1	200 00	6,131 38
Thorold	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wainfleet	4,137	3,058	1,079	1 00	1,079 00	.....	.....	partly	.....	1	75 00	2,872 79
Willoughby	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wellington:												
Arthur	3,306	3,250	56	1 00	56 00	115	115	no	no	1	90 00	6,134 00
Eramosa	2,686	2,350	336	1 00	336 00	66	66	1901	.....	1	110 00	8,667 61
Erin	3,825	3,525	300	1 00	300 00	125	125	1907	.....	1	120 00	3,000 00
Garafraxa, W	2,831	2,605	226	1 00	226 00	81	81	no	no	1	75 00	6,143 40
Guelph	.....	.....	.....	.....	.....	.....	.....	.....	yes 1902	1	170 00	5,936 60
Luther, W	3,524½	3,493¾	30¾	1 00	30 75	73	73	no	no	1	65 00	2,035 96
Maryborough	3,670	3,645	25	1 00	25 00	115	121	no	no	1	90 00	7,756 22
Minto	3,347	3,234½	122½	1 00	122 50	95	95	no	no	1	125 00	5,254 00
Nichol	1,857	1,648	209	1 00	209 00	60	52	no	no	1	125 00	2,336 80
Peel	4,874	4,854	20	1 00	20 00	113	113	no	no	2	110 00	4,000 00
Pilkington	1,427	1,405	22	1 00	22 00	60	60	no	no	2	80 00	2,700 00
Puslinch	3,470	2,810	660	1 00	660 00	111	111	.....	no	1	150 00	2,795 90
Wentworth:												
Ancaster	4,984	1,164	3,820	1 00	3,820 00	37	37	1911	.....	1	250 00	7,318 16
Barton	12,771	.....	12,771	30	3,831 30	7	7	1904	no	2	500 00	4,168 70
Beverly	4,000	3,175	814	1 00	814 00	120	120	yes	no	1	160 00	7,000 00
Binbrook	1,608	.....	1,608	1 00	1,608 00	28	28	wholly 1897	.....	1	50 00	1,483 79
Flamboro, E	2,480	.....	.....	1 00	2,480 00	.....	.....	1903	1903	2	200 00	6,520 00
Flamboro, W	2,485	2,049	436	1 00	436 00	50	50	no	no	1	140 00	4,599 76
Glanford	1,645	1,469	176	1 00	176 00	48	46	optional	no	1	65 00	1,110 00
Saltfleet	7,734	.....	all	50	3,867 00	5	5	years ago	.....	2	200 00	8,306 81
York:												
Etobicoke	4,961	1,014	3,947	1 00	3,947 00	86	56	partly	no	2	425 00	10,000 00
Georgina	1,987	1,837	150	1 00	150 00	43	43	.....	no	1	60 00	6,590 90
Gwillimbury, E	3,501	2,659	842½	1 00	842 50	67	67	.....	.....	1	94 50	6,008 56
Gwillimbury, N	5,042	3,392	1,650	1 00	1,650 00	46	46	.....	.....	1	75 00	600 00
King	6,020	5,524	496	1 00	496 00	108	188	no	no	2	220 00	11,093 43
Markham	.....	.....	.....	.....	.....	79	79	.....	.....	2	200 00	8,355 19
Scarborough	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vaughan	.....	4,000	.....	.....	.....	90	90	.....	old system	2	190 00	16,500 00
Whitchurch	3,949	3,450	499	75c & 1.00	398 00	71	71	partly	.....	1	100 00	4,286 00
York	.....	.....	.....	1 00	33,056 77	12	12	wholly 1900	.....	4	2950 00	43,010 06

APPENDIX No. 12

Road Improvement and Land Values

Although it is commonly found that the highest priced farming lands are usually served with relatively better highways than lands commanding smaller prices, it has been a matter of discussion as to whether land values are affected directly by road improvement; and granted that such is the case, there has still remained the question of the expense of this relationship.

For the purpose of securing definite information on the matter, an inquiry was made throughout the Province of farmers living in sections adjacent to stretches of road recently improved under the Act to Aid in the Improvement of Public Highways.

On the forms sent out were printed the following questions:

1. What was the value of land per acre on your farm, or any typical farm in your neighborhood, BEFORE the adjacent road was permanently improved?

2. What was the value of land per acre AFTER the adjacent road was permanently improved?

3. What, therefore, was the INCREASE in the value of land per acre due to road improvement?

4. What is the present average value per acre of lands of the same farming quality which, however, are back five miles from an improved road?

The replies received are presented in tabular form, together with supplementary remarks from the various correspondents. These figures and comments, being based on the actual experience of farmers in districts where road improvement has been going on, may be considered the most definite and accurate information obtainable, and the best answer to any question that may have been entertained as to the influence of improved roads on land values.

The data is presented by counties, arranged in alphabetical order. It will be observed that inquiries were made in those counties only where road improvement has been in progress under "The Highway Improvement Act."

CARLETON COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road.
	$	$	$	$
1	50	75–100	10–20	20–40
2	25	25	.....	.....
3	100	90	.....	.....
4	60	.....	.....	.....

1. Good roads certainly advance land values, especially permanently improved roads; roads that can draw a load on any day in the year, not "fair weather" roads that you cannot use in spring or fall when most needed, but stone or good gravel roads.

2. I cannot say my farm is worth any more on account of road improvement. It is light land and most of it pasture.

3. What is the use of a good road when you have to pay about one dollar every time you drive on it in tax?

4. I think myself the good roads are a fine thing, and no doubt a man living beside them and knowing the benefit would perhaps not take $1,000 difference and go back two or three miles; but so far as the selling price is concerned, I see no difference so far. I think it would be a wise idea to spend a little money repairing the roads that are built.

FRONTENAC COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	36	60	24	53
2	45	50	5	40
3	40	60	20	30–35
4	49	50	.....	45
5	30	60	20	25
6	20–30	30–50–60	10–30	15

1. I think probably that farm lands in this locality command higher prices than are commonly paid for such. Convenience to the City of Kingston market is often an inducement to buyers.

2. A short piece of road that has been built by the county, of three or four miles in our township, I do not think would make any difference in the price of land, but should they keep on and build good roads leading to the main roads, I think you can count at $5 an acre more on our land.

3. I do not believe in so much patchwork; I think there should be not less than twelve miles completed at a stretch before moving to another part.

5. The good roads system not only improves the looks of the property, but the value as well. It also facilitates the marketing of farm produce by saving of time and, in consequence, money.

6. The better the roads the more produce is raised. The farmer's sole ambition is to have good roads on which to haul his produce to market. It is poor encouragement to a farmer to produce any amount of stuff and have mud roads to be harassed with. Good roads and better roads mean more production for the farmer and more wealth to the country.

HALDIMAND COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles rom an improved road
	$	$	$	$
1	50	70–75	20–25	50

HALTON COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	45	50	5	45
2	.....	.....	.....	.....
3	.....	.....	.....	.....
4	40	42	.....	40
5	.....	.....	25–40	60–80
6	50	70	20	45

1. The road is in splendid condition at present, but requires some person to look after it.

2. The assessor increased my assessment $10 an acre this year higher than my neighbours east and west, on account of my having the benefit of the country road, which runs north. As I ship about 7,000 boxes of apples during November and December, the season of bad roads, the value to me of the good road to the station is very great.

4. There is a great deal of rough land in this neighborhood, which the good roads will not improve in price. The $2 per acre increase is on the workable land.

6. The increase in the value of land is not all credited to good roads, but to the increase of immigration, also the influx from the west and settling in Ontario, are helps to raise the price of land here.

HASTINGS COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	30	40	5	40
2	50	60	10	40
3	30	40	10	30
4	25	40	15	25
5	35	60–70	30–35	40–50
6	50–60	60–70	10	.....
7	3	5	2	1

LANARK COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	50	55	5	40
2	40	60	20	40
3	20	15	.....	.....
4	75	.....	5	60
5	30	30	.....	30
6	55	70	15	50

1. Good roads pay, even if the value of the land does not increase, for increase of land values means increase of taxes, which inclines to counterbalance increase in land value.

2. Our whole county has been improved in vaule and also comfort. This summer was built one mile opposite my farm, and I can hardly tell you how I appreciate it.

4. The road was previously a toll road, so that I would not say that the road has increased the value of my land. However, the extra tax is not nearly so much as the toll amounted to formerly. Where the road was previously a mud road, I would say my farm is worth at present $500 more per 100 acres.

5. In my opinion, I do not think the road has increased the value of the land one cent in this neighborhood. Farms lying back four or five miles from the road appear to sell just as good as the farm beside it, and I know of two cases where they sold better.

LEEDS AND GRENVILLE COUNTY.—Land Values, Per acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	20	20	.....	.....
2	15	0	.....	.....
3	20	24	4	18
4	8¼	8¼	.....	.....
5	29	35	5	3
6	45	50	5	.....
7	45	50	5	40
8	40	42	2	35
9	45	50	5	.....

8. My farm being situated near the village and always on a good road, it is hard to say whether I could get more per acre or not, but I think that any man's farm that has a good road past it is worth from $2 to $5 per acre more. I think it would depend a lot on the location of farm, markets, etc.

LENNOX AND ADDINGTON COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	50	60	10	40
2	50	60	2½	50
3	70	90-100	15-25	50

2. The county road in our vicinity is getting in a bad state. It is not much better than it was before improved. It has been improved eight years, and no work has been done on it since. If a road is not kept in good state I do not think it increases the value of our land very much.

LINCOLN COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	.....	100	.....	80-100
2	100	150	50	70
3	80	500	300 possibly less	30

1. I have always lived on a good stone road, so cannot speak from experience. This much I will say, I would not live on a poor road, but would gladly pay $25 an acre more for a farm on a stone road.

MIDDLESEX COUNTY.—Land Vaues, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	40–50	100–125	25–50	50–60
2	60	65	5	65
3	80	80	.....	70
4	25	40–50	15–25	.....

5. I live about half a mile from the adjacent road, but I do not think it has improved my farm any, as it is in a direction I hardly ever travel, but I suppose it would benefit some farmers that live alongside of it.

OXFORD COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	60	80	20	50
2	60	60	.....	50
3	75	100	25	70
5	70–80	70–80	.....	70–80
4	70	75	5	70
6	80–100	.....	.....	5–15

2. The price is not so much on account of the roads as the distance from market. In the first place a person living five miles away from market rides, perhaps, as often and sometimes oftener than the person who may have the piece of good road running in front of his door. And, again, if the automobile business is to continue, the farm alongside of the good piece of road will depreciate in value, for neither grain nor grass can or will do anything on account of the dust that is thrown in the fields.

4. The roads are too expensive; so many favoured men. The roads are in good shape in this part of the country, but would be better if there was some way to compel the road overseer to put in correct returns to the Clerk of the Council. Some beats do their work well, while others do not. There are over 700 acres of choice lands for sale, the reason for wishing to sell being that there is no satisfactory help.

5. Land, of course, has advanced in price since five years ago. It depends a great deal upon the location of the land as well as good road when you come to buy, but I think that a good road alongside of a farm increases its value anyway $5 per acre.

6. Our farm is situated on the old Woodstock and Norwich gravel road, that was kept in pretty good repair. Consequently there has not been as much difference in the value of farm land in our neighborhood since the building of the county as there would have been in many other places. In the east part of our township (East Oxford), where a county road is laid out (and should be built as soon as possible), it would add a great deal to the value of the land, as the road has been neglected, and is in a very bad state of repair. The automobiles have injured the county roads that have been built a great deal.

PEEL COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	35	35	.....	35
2	50	55	5	50
3	40	50	10	40

3. We have practically no land in this township that is five miles from improved roads. The system is so laid out as to reach every part of the township within five miles. We find that the demand for farms adjacent to improved roads has greatly increased.

PERTH COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	60	75	15	60
2	55	65	10	45
3	30	30	.....	30
4	65	.....	.....	65

2. I have made an estimate on, say, the average farm. I am sorry that we have so little improved roads, as they are well worth the money that they cost, and the farmers in this section are greatly pleased for the small amount we have received.

3. The autos have taken possession of this road, and driven the horse off to other roads which are not used by autos and motorcycles. The dust after the auto and motorcycle is going to decrease the value of land lying along this road, as it covers the grass and grain with dust which, when wet with dew, makes it rust.

PRINCE EDWARD COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	30	30	.....	30
2	20-30	.....	.....	.....
3	30	40	10	25

3. The land would increase in value a great deal more if taxation were not so heavy and there were all improved roads.

SIMCOE COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	60	55	5	60
2	50-70	60-80	10	40-50
3	41	41	.....	35
4	35	35	.....	35
5	55	60	2	55
6	75	90	15	50-60

2. Owing to the North-West fever, land in this section has taken a slump. Farms a few years ago worth $8,000 sell for $6,500.

Also the automobiles are ruining the road. A county road built in front of my farm about six years ago, good for fifteen years of ordinary traffic, was ruined in the last two years by autos.

WATERLOO COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$		$
1	50–75	50–75	.....	50–75
2	55	55	.....	.....

WELLINGTON COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	30	35	5	30
2	38	41	.....	.....
3	50	55	5	40–45
4	25	50	25	40
5	75	75	.....	.....
6	60	.....	.....	45–50
7	45	.....	.....	45
8	40	60	20	.....
9	40–70	40–70	.....	.....
10	65	65	.....	60
11	60	60	.....	50
12	55–60	55–60	.....	60

6. I do not believe the road adjacent my farm is permanently improved yet. However, many people are striving to secure property along this county road, and property will steadily increase in value from this on.

WENTWORTH COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	300	500	200	200
2	80	100	20	80
3	60	60	.....	.....
4	40	45–50	5–10	35

2. The greatest benefit derived from good roads is the time and labor saved in delivering produce to the markets.

3. The nearer you go to the city the higher the valuation of property, owing to the great boom in the city and gardens and real estate. Yet I believe that good farm land has increased in value alongside newly built macadamized roads.

4. The good roads system has certainly raised the value of our land, and it has also raised the taxes to almost half a fair rent for our land.

YORK COUNTY.—Land Values, Per Acre.

Correspondent	Before adjacent road improvement	After adjacent road improvement	Increase	Back five miles from an improved road
	$	$	$	$
1	100	100	.....	100
2	100	125	25	.....
3	200	200	.....	.....
4	600	800	200	.....
5	.....	.....	.....	125
6	1,300	1,700	400	.....

2. My next neighbor, before the good roads started, was asking $8,000 for his farm, and since the good road started he asked and got it. Now the man that bought it could get $10,000. I think this good road improvement is the best thing that ever happened the country. I think everyone is well satisfied with the road system. The only objections I have to this good roads business is that they do not itemize the cost of each.

5. The road was in a very bad state before the improvement. The advance in real estate reached here just as the road was completed, and it has advanced steadily for the last two years. It is selling at from $15 to $40 per foot. The road improvement has done quite a lot towards the sale of property. Four miles from here land that was selling from $150 to $200 per acre is now sold at $400 per acre or just double the price asked before road improvement. This land was sold for market gardens.

6. This farm is fifty acres, and it was sold last spring for $65,000, and has been sold again for $85,000.

APPENDIX No. 13

Memorandum on Assessment in Ontario

Subject to certain provisions noted below, the principle of land valuation in municipal assessment for Ontario is that "land shall be assessed at its actual value" (R.S.O. 1914, c. 195, s. 40, ss. 1). The point of inquiry raised by the Commission has been as to whether or not this principle has been carried out in the actual assessing of properties. Weir, in the "Assessment Law of Ontario," page 130, interprets the law as follows:

"By 'value of land' and 'actual value' in this section is doubtless meant the market value, or the value as an asset of the owner's estate. Its actual value must, however, be measured in dollars, and is not more than what, within a reasonable time and with due care, can be realized from the sale of it. . . . Strictly speaking, the value of the land, as of any other commodity, is the price it will bring at the time it is offered for sale: Squire *qui tam v.* Wilson, 15 C. P. 284."

The Commission made particular inquiry as to whether there have been discrepancies between the assessed values of given properties and the prices which such properties bring when under sale. The data collected in this connection is to be found in the following tables which are self-explanatory.

The provisions modifying the general principle of assessing land at its actual value are here noted.

(1) Mineral, oil and gas lands shall be assessed at least at local agricultural value. Industrial income to be assessed separately. (R.S.O. 1914, c. 195, s. 40, ss. 5-9.)

(2) The value of buildings and land is to be ascertained separately and the assessment shall be the sum of values. The value of buildings shall be the amount by which the value of the land is thereby increased. If, however, buildings increase the value of the land, by less than the cost of building or replacing the same, the assessment of buildings is to be the less sum. The principle involved is that the building assessment should be the selling value of the whole property minus the selling value of the land without buildings. (R.S.O. 1914, c. 195, s. 40, ss. 3.)

(4) Toll roads not owned by municipalities, but situated therein, are to be assessed as real estate. (R.S.O. 1914, c. 195, s. 41.)

(5) Lands of public service corporations shall be assessed at actual cash selling value. (R.S.O. 1914, c. 195, s. 44, ss. 3.)

(6) Roadways of railway corporations shall be assessed at actual local value of land, but this is not to include any structures whatsoever. Structures of all kinds (exclusive of rolling stock, tunnels and bridges) on any highway, etc., not merely crossed by same, are to be assessed at actual cash selling value to a company possessing similar powers, rights and franchises. The same basis of assessment holds good for all other real property. Vacant land belonging to railways is to be assessed as other vacant land. Telephone and telegraph plants of railway companies not used commercially are non-assessable. Where used commercially the assessment is $5.00 per mile for poles, wires, etc. (R.S.O. 1914, c. 195, s. 47, ss. 2.)

(7) Exemptions:—

(*a*) Railway corporations may be made exempt of all taxes, except school taxes, or may commute their assessment by virtue of municipal by-law. (R.S.O. 1914, c. 192, s. 395, 397.)

(*b*) Already exempted property is liable to assessment for local improvements. (R.S.O. 1914, c. 193, s. 48.)

PERCENTAGES OF SALE PRICES REPRESENTED BY ASSESSMENTS IN COUNTIES OF ELGIN, FRONTENAC, HALTON, MIDDLESEX, WATERLOO AND WENTWORTH.

Elgin County.

	Number.	Sale Price.	Assessed Value.	Per cent.
Aldborough Township ...	1	$8,500 00	$7,000 00	82.3
	2	4,000 00	3,300 00	82.5
	3	3,200 00	2,700 00	84.3
Bayham Township	1	4,000 00	1,600 00	40.0
	2	5,250 00	3,500 00	66.6
	3	2,200 00	1,950 00	88.6
	4	6,000 00	5,100 00	85.0
	5	4,500 00	3,700 00	82.2
	6	2,600 00	2,000 00	76.9
Dunwich Township	1	2,450 00	2,000 00	81.6
	2	5,400 00	4,000 00	74.0
	3	4,200 00	4,000 00	95.2
	4	4,000 00	2,500 00	62.5
	5	4,500 00	3,700 00	82.2
	6	3,300 00	1,900 00	57.5
	7	3,400 00	3,000 00	88.2
	8	5,000 00	3,800 00	76.0
Malahide Township	1	5,100 00	3,294 00	64.5
	2	5,500 00 (1908)	3,200 00	58.1
	3	4,000 00	2,600 00	65.0
	4	11,000 00	8,000 00	72.7
	5	4,500 00	2,800 00	62.2
	6	4,700 00	2,675 00	56.9
S. Dorchester Township .	1	3,800 00	3,100 00	81.5
	2	9,500 00	8,400 00	88.4
	3	3,250 00 (1911)	3,100 00	95.0
	4	8,000 00	5,800 00	72.5
	5	9,500 00	8,400 00	88.4
	6	8,000 00	5,300 00	66.2
	7	5,060 00 (1911)	3,700 00	73.1
	8	7,000 00	5,800 00	82.8
Southwold Township	1	4,400 00	3,900 00	88.6
	2	9,000 00	6,200 00	68.8
	3	5,350 00	3,360 00	62.8
	4	6,500 00	2,600 00	40.0
	5	3,350 00	2,250 00	67.1
	6	7,500 00	2,192 00	29.2
Yarmouth Township.....	1	4,000 00	2,916 00	72.9
	2	2,500 00 (1911)	2,700 00	....
	3	4,000 00	3,250 00	81.2
	4	10,000 00	7,650 00	76.5

Frontenac County.

Kingston Township	1	$4,020 00	$2,800 00	69.0
	2	4,500 00	2,000 00	44.0
	3	1,500 00	500 00	33.0
	4	7,000 00	3,700 00	53.0
	5	30,000 00	12,000 00	40.0
	6	6,500 00	3,000 00	46.0
	7	7,700 00	3,150 00	41.0
	8	800 00	450 00	56.0
	9	12,000 00	5,500 00	42.(

FRONTENAC COUNTY.—Continued.

	Number.	Sale Price.	Assessed Value.	Per cent.
Kingston Township.—Con..	10	9,000 00	5,200 00	58.0
	11	8,000 00	4,300 00	54.0
	12	4,250 00	1,600 00	38.0
	13	2,550 00	1,100 00	43.0
	14	3,200 00	900 00	28.0
	15	15,000 00	7,000 00	47.0
	16	2,000 00	1,000 00	50.0
	17	4,600 00	1,800 00	39.0
	18	2,300 00	1,250 00	54.0
	19	3,500 00	800 00	23.0
	20	1,300 00	800 00	61.0
	21	4,000 00	1,000 00	25.0
	22	1,000 00	300 00	33.0

HALTON COUNTY—ALL TOWNSHIPS.

(Report of Judge Elliott, 1913, in appeal against Halton County By-law equalizing Assessment.)

Nassagaweya—Assessment—	92%	of	value	shown	by sales.
Nelson,	" 51%	"	"	"	
Esquesing,	" 51%	"	"	"	
Trafalgar,	" 45%	"	"	"	
Acton,	" 59%	"	"	"	
Georgetown,	" 59%	"	"	"	
Milton,	" 68%	"	"	"	
Oakville,	" 84%	"	"	"	
Burlington,	" 58%	"	"	"	

MIDDLESEX COUNTY.

	Number.	Sale Price.	Assessed Value.	Per cent.
Adelaide Township	1	$7,400 00	$5,940 00	79.2
	2	8,000 00	4,500 00	56.2
	3	5,000 00	4,100 00	82.0
	4	4,500 00	2,800 00	62.2
	5	4,500 00	2,300 00	51.1
	6	2,500 00	2,800 00	....
	7	1,400 00	1,140 00	81.4
Biddulph Township	1	4,500 00	2,900 00	64.4
	2	6,000 00	4,700 00	78.3
	3	5,000 00	4,800 00	96.0
	4	3,000 00	2,300 00	76.6
	5	3,050 00*	4,700 00	....
	6	5,100 00	4,000 00	78.4
	7	5,200 00	4,100 00	78.8
	8	6,100 00	4,700 00	77.0
	9	5,000 00	6,510 00	....
	10	5,000 00	4,000 00	80.0
Dorchester North Township.	1	16,500 00	8,500 00	51.5
	2	3,800 00	4,500 00	....
	3	4,000 00	2,500 00	62.5
	4	3,000 00	3,000 00	....
	5	4,000 00	2,400 00	60.0
	6	3,400 00	2,600 00	76.4
	7	3,150 00	2,900 00	92.0
Lobo Township	1	5,000 00	4,500 00	90.0
	2	9,000 00	5,200 00	57.7
	3	8,000 00	5,900 00	73.7
	4	2,800 00	2,150 00	76.7
	5	2,500 00	2,000 00	80.0
	6	3,000 00	2,300 00	76.6
	7	3,000 00	2,000 00	66.6
	8	3,000 00	2,000 00	66.6

*$3,250.00, buildings included.

MIDDLESEX COUNTY.—Continued.

	Number.	Sale Price.	Assessed Value.	Per cent.
London Township	1	4,500 00	4,000 00	88.8
	2	7,500 00	6,500 00	86.6
	3	1,650 00	900 00	54.5
	4	5,600 00	4,000 00	71.4
	5	6,500 00	5,700 00	87.6
	6	7,500 00	5,000 00	66.6
	7	7,500 00	5,400 00	72.0
	8	5,000 00	2,750 00	55.0
McGillivray Township ..	1	5,500 00	4,900 00	89.0
	2	7,500 00	5,200 00	68.0
	3	3,300 00	3,900 00	....
	4	4,700 00	3,400 00	72.3
	5	3,275 00	2,600 00	79.3
	6	1,250 00	700 00	56.0
	7	5,000 00	4,000 00	80.0
Nissouri West Township.	1	4,500 00	3,000 00	66.6
	2	2,700 00	2,000 00	74.0
	3	5,500 00	2,500 00	71.4
	4	5,500 00	4,300 00	78.1
	5	5,300 00	4,800 00	90.5
	6	7,200 00	5,400 00	75.0
	7	6,500 00	5,000 00	76.9
	8	3,800 00	3,000 00	78.9
	9	8,000 00	5,500 00	68.7
	10	6,250 00	5,400 00	86.4
Westminster Township ..	1	8,000 00	4,500 00	56.2
	2	11,500 00	9,000 00	78.2
	3	25,000 00	5,800 00	27.2
	4	8,000 00	6,500 00	81.2
	5	3,300 00	2,650 00	80.3
	6	5,600 00	5,500 00	80.3
	7	7,100 00	5,600 00	78.8
	8	7,800 00	6,300 00	80.7
	9	7,000 00	6,100 00	87.1
Williams East Township.	1	2,100 00	1,650 00	78.5
	2	4,500 00	3,800 00	84.4
	3	2,600 00	1,860 00	71.5
	4	2,500 00	1,550 00	62.0
	5	2,100 00	1,486 00	70.7
	6	6,300 00	3,800 00	60.3
	7	7,000 00	3,800 00	54.2
	8	2,830 00	1,550 00	54.7
	9	2,700 00	1,450 00	53.6
	10	6,500 00	3,825 00	58.8
Williams West Township.	1	3,200 00	1,525 00	47.6
	2	4,400 00	2,700 00	61.3
	3	5,200 00	3,650 00	70.1
	4	1,000 00	750 00	75.0
	5	2,500 00	1,450 00	58.0
	6	4,800 00	3,000 00	62.5
	7	1,440 00	1,100 00	76.3
	8	4,200 00	2,250 00	53.5
	9	2,300 00	1,760 00	76.5
	10	4,500 00	2,597 00	57.7
	11	5,200 00	3,100 00	59.6

WATERLOO COUNTY.

	Number.	Sale Price.	Assessed Value.	Per cent.
North Dumfries Township.	1	$7,000 00 (1904)	$5,600 00	80.0
	2	12,750 00	6,900 00	54.1
	3	8,000 00	7,000 00	87.5
	4	11,000 00	7,700 00	70.0
	5	9,500 00	5,050 00	53.1
Waterloo Township	1	5,300 00	5,500 00	....
	2	7,000 00	8,000 00	....
	3	4,250 00	3,000 00	70.5
	4	4,600 00	4,000 00	86.9
	5	5,000 00	4,100 00	82.0
	6	7,500 00	3,500 00	46.6
	7	4,300 00	3,100 00	
	8	2,800 00	2,400 00	85.7
	9	*4,000 00	3,400 00	85.0
	10	7,000 00	5,500 00	78.5
	11	6,500 00	4,600 00	70.7
	12	6,950 00	4,800 00	69.0
	13	7,000 00	3,400 00	48.5
	14	11,500 00	5,000 00	43.4
Wellesley Township	1	4,800 00	4,800 00	....
	2	5,850 00	5,600 00	95.7
	3	7,500 00	5,400 00	72.0
	4	9,000 00	7,900 00	87.7
	5	5,800 00	4,800 00	82.7
	6	4,700 00	4,300 00	91.6
	7	2,600 00	2,800 00	....
	8	6,250 00	5,400 00	86.4
	9	8,700 00	5,300 00	60.9
	10	3,550 00	5,600 00	....
Wilmot Township	1	3,600 00	2,200 00	61.1
	2	18,000 00	11,000 00	61.1
	3	475 00	300 00	63.1
	4	6,000 00	4,400 00	73.3
	5	6,000 00	5,300 00	88.3
	6	7,000 00	4,900 00	70.0
	7	6,000 00	4,900 00	81.6
	8	14,000 00	9,500 00	67.8
	9	5,000 00	4,800 00	96.0
Woolwich Township	1	3,500 00	1,059 00	30.2
	2	9,100 00	6,164 00	67.7
	3	7,300 00	5,000 00	68.4
	4	7,300 00	5,400 00	74.9

WENTWORTH COUNTY.

Barton Township	1	$7,000 00	$1,200 00	17.1
	2	7,750 00	1,200 00	15.4
	3	9,500 00	1,000 00	10.5
	4	26,000 00	1,620 00	6.2
	5	32,000 00	3,650 00	11.4
	6	17,000 00	2,650 00	15.5
	7	14,000 00	900 00	6.4
	8	12,000 00	1,400 00	11.6
	9	2,700 00	900 00	33.3

*Under power of sale.

WENTWORTH COUNTY.—Continued.

	Number.	Sale Price.	Asesssed Value.	Per cent.
Binbrook Township	1	3,000 00	1,000 00	33.3
	2	5,500 00	3,900 00	70.9
	3	6,000 00	4,500 00	75.0
	4	4,000 00	3,300 00	82.5
	5	6,000 00	3,200 00	53.3
	6	8,200 00	5,800 00	70.7
	7	8,500 00	5,350 00	62.9
	8	6,000 00	3,600 00	56.0
	9	5,000 00	3,750 00	75.0
	10	6,200 00	4,000 00	64.5
	11	20,000 00	7,500 00	37.5
	12	4,200 00	3,900 00	92.9
	13	12,000 00	6,500 00	50.4
	14	3,250 00	2,500 00	76.9
	15	5,000 00	1,300 00	26.0
	16	6,900 00	5,700 00	82.8
	17	2,400 00	1,900 00	79.1
	18	2,025 00	1,900 00	93.8
	19	2,100 00	1,600 00	76.2
	20	3,000 00	2,200 00	73.3
	21	675 00	550 00	81.4
	22	6,250 00	4,700 00	75.2
	23	1,800 00	1,600 00	88.8
	24	2,000 00	1,500 00	75.0
	25	3,300 00	2,900 00	87.8
	26	2,025 00	1,200 00	59.2
	27	3,000 00	2,500 00	83.3
	28	2,200 00	1,800 00	81.8
Glanford Township	1	1,700 00	1,300 00	76.4
	2	6,500 00	6,000 00	92.3
	3	7,500 00	4,200 00	56.0
	4	12,750 00	7,550 00	59.2
	5	8,000 00	4,100 00	51.2
	6	13,000 00	6,300 00	48.4
	7	7,000 00	4,000 00	57.1
	8	6,000 00	3,600 00	60.0
	9	4,000 00	1,900 00	47.5
	10	7,500 00	4,300 00	57.3
	11	6,000 00	3,900 00	65.0
	12	3,800 00	2,390 00	62.1
	13	6,500 00	6,000 00	92.3
	14	2,200 00	1,600 00	72.7
	15	2,505 00	1,600 00	63.8
	16	5,200 00	4,100 00	78.8
	17	5,200 00	4,100 00	78.8
	18	1,500 00	1,300 00	86.6
Saltfleet Township	1	9,400 00	6,500 00	69.1
	2	10,000 00	5,000 00	50.0
	3	10,000 00	6,550 00	65.5
	4	3,100 00	2,900 00	93.5
	5	17,800 00	6,885 00	32.5
	6	10,000 00	6,750 00	67.5
	7	2,900 00	700 00	24.1
	8	3,300 00	1,040 00	31.5
	9	4,200 00	3,400 00	80.9
	10	4,300 00	2,688 00	62.3
	11	3,500 00	2,640 00	76.8
	12	3,500 00	3,200 00	94.2
	13	3,250 00	2,200 00	68.0
	14	3,900 00	3,300 00	84.0
	15	1,800 00	1,500 00	83.3
	16	4,000 00	2,570 00	64.1
	17	2,900 00	2,000 00	68.9

WENTWORTH COUNTY.—Continued.

	Number.	Sale Price.	Assessed Value.	Per cent.
Saltfleet Township.—Con...	18	5,500 00	3,700 00	67.3
	19	4,400 00	2,200 00	50.0
	20	4,200 00	3,650 00	86.9
	21	5,500 00	3,700 00	67.3
	22	3,000 00	1,430 00	47.6
	23	4,800 00	3,700 00	77.0
	24	3,900 00	3,300 00	84.9
	25	4,000 00	2,500 00	62.5
	26	3,600 00	2,000 00	55.5
	27	9,000 00	5,130 00	57.0
	28	4,000 00	3,360 00	84.0
	29	5,000 00	3,000 00	60.0
	30	2,000 00	1,774 00	88.2
	31	4,500 00	2,700 00	60.0
	32	4,200 00	3,000 00	71.4
	33	6,000 00	2,700 00	45.0
	34	765 00	680 00	88.9

In the above tables are presented the sale prices and assessed values in certain specific cases of properties in various parts of the Province. The figures are based on actual records or on the testimony of witnesses in cases of appeal from the revision of assessments. The six counties from which data has been gathered are taken as fairly representative of conditions throughout the Province; especially as discrepancies between sale prices and assessed values appear to be uniformly numerous everywhere.

In illustration of the problem before the assessor, the County Council in its revision of assessment and the County Judge in his consideration of any appeals, the following paragraphs taken from the judgment in the case of an appeal of Nassagaweya Township against the Halton County by-law of June 30, 1913, equalizing the assessment, may prove of interest. In collecting evidence Judge J. W. Elliott, to whom the case was sent, heard under oath the various assessors, their testimony being in effect as follows:—

1. *James Simpson* (Nassagaweya).

[The principle he was instructed to adopt was to assess all lands in the township "at the value they would readily sell for in the market."]

This is clearly right, and if he acted conscientiously and with fair judgment, as I think he did, the result cannot be greatly quarrelled with.

2. *John L. Cotter* (Nelson).

He "valued a farm and set it down for that amount, but not which it would bring at a sale." After going over Mr. Dick's list of sales and the assessments of many properties in the township, Mr. Cotter said he thought his assessment looked like 50 per cent. of the "actual value." This estimate, I think, is a little too low.

3. *James Reid* (Divisions 4, 5 and 6, Esquesing; about one-half of the township).

[One large industry, the "Acton Tanning Co.," assessed at about 50 per cent. of its actual value. On the whole his assessment would average 65 or 70 per cent. of actual value of properties.]

Robert Joyce (Divisions 1, 2 and 3, Esquesing).

[One large industry, "The Milton P. B. and Terra Cotta Co., assessed at about 40 per cent. of its "actual value."

His total assessment of all properties in his district was about 65 per cent. of "actual value."]

4. *S. H. Albertson* (eastern part of Trafalgar).

[Did not assess at "actual value."

In 1913 tried to approach to "actual value" as set out in Assessment Act, but in 1912 assessment was about 65 per cent. of this.]

Henry Heeks (western part of Trafalgar).

[Assessment in 1912 was about 65 per cent. of "actual value" in his part of township.]

5. *John Harvey* (Acton).

[Assessed the property of Beardmore & Co. at its fixed assessment of $30,000.00.]

This for the purposes of equalization is clearly wrong. A municipality may, for its own purposes, fix the assessment of any of its industries for a term of years at any figure below its "actual value" they please, but the assessor should assess the property, notwithstanding this, at its full assessable value so that for county purposes all properties in the county may pay for their fair share of taxation, and the figure showing the actual assessable value is required for this. The municipality where the industry is located, for its own purposes, uses of course the fixed assessment. This property, Mr. Harvey stated, should therefore have been assessed at $50,000.00, to which was to be added the business assessment.

[With this exception, he assessed properties for, "what they would sell for under fair conditions for cash."

Numerous properties were referred to, and Mr. Harvey gave his opinion of their value at a sale. In many instances his estimate was higher than the assessment.]

6. *Alexander McDonald* (Georgetown).

He made the same error in regard to fixed assessments as Mr. Harvey, but I did not think in the case of Arnold & Sons the fixed assessment of $5,000.00 was less than the "actual value."

The Coating Mill and the Georgetown Coating Mill, however, each fixed at $10,000, should be $25,000 to $28,000 each, and to each of these there should be added a proper business assessment (which the assessor omitted) aggregating $33,000. For county purposes this would make a substantial increase.

In other respects his assessment would appear to be about the same as Acton.

7. *R. H. Hemstreet* (Milton).

[There are no fixed assessments. The Carpet Factory and Screw Factory are exempt from taxation, excepting for school purposes, but are assessed like other properties in this respect.

In his assessment Mr. Hemstreet tried to get approximately the "actual value," keeping, however, on the safe side. His assessment on the whole, after going over Mr. Dick's list and many other properties, would be from 65 to 75 per cent. of selling price. The cheaper class of houses, however, are assessed at a higher percentage.]

8. *W. S. Savage* (Oakville).

[It is to be noted that in 1912 a new method was taken and the town was assessed by a Commission of three competent and fair-minded men appointed for such purposes.

This Commission employed valuators, made an examination of all properties, fixed their fair "actual value," and they were assessed at this amount.

In the result the assessment was raised to a figure far above preceding years.

The assessment by the Commission was	$1,511,460
The Court of Revision reduced this by	45,765
Leaving a total assessment of	$1,465,695
To which was added a business assessment of	69,690
And income of	32,700
	$1,568,085

exceeding the assessment of 1911 by nearly half a million dollars.

In his judgment the town was assessed to a high figure. Sales might have shown more, however. Houses of working men assessed in many instances at full value.]

9. *John L. Cotter* (Burlington).

The portion annexed to the village under order of the Ontario Railway and Municipal Board of 29th April, 1909, has for twelve years from 1st of May, 1909, a fixed assessment of $86,700, which has been increased since by buildings by $13,600, making a total of $100,300.

In his assessment for 1912 he left it at this figure. It should be, if assessed at "actual value," about double that amount.

After going through Mr. Dick's list and a number of other properties and comparing the prices they would readily bring at a cash sale with their respective assessments, I am forced to a conclusion that Mr. Cotter's assessment of the whole village in 1912 would not exceed 65 or 70 per cent. of the actual value, leaving out of the question the assessment of the "Annex," which I will deal with later.

. . . . Giving the whole matter, therefore, my best consideration, hearing all that the parties before me had to say, and dealing with all the evidence as carefully and impartially as I can, I have come to the conclusion that the total assessments in the respective municipalities hereinbefore set out bear the following percentage to the "actual value," i.e., the proper assessable value in each case:—

	Per cent.
1. Nassagaweya	90
2. Nelson	60
3. Esquesing	60
4. Trafalgar	60
5. Acton	68
6. Georgetown	68
7. Milton	75
8. Oakville	90
9. Burlington	66

[He then makes an equalization by adding to the total assessments of each of the municipalities a sufficient additional percentage to bring them all up to 100 per cent. each. This works as follows:—

	Per cent.		Per cent.	
1. Nassagaweya	(90)—	$1,484,418	(100)—	$ 1,649,354
2. Nelson	(60)—	2,222,790	(100)—	3,704,650
3. Esquesing	(60)—	2,383,049	(100)—	3,971,749
4. Trafalgar	(60)—	2,913,710	(100)—	4,856,185
5. Acton	(68)—	454,345	(100)—	668,155
6. Georgetown	(68)—	524,939	(100)—	771,970
7. Milton	(75)—	558,791	(100)—	745,055
8. Oakville	(90)—	1,568,085	(100)—	1,742,317
9. Burlington	(67)—	971,910	(100)—	1,472,591
Grand total				$19,582,026

But the total assessment amounted to $13,082,037, consequently the grand total above was reduced to this sum and a rateable reduction made from each municipality in proportion to their percentages.

Of "actual value" of land in the case of assessment the Judge gave as his interpretation "the price that could be readily obtained for the property at a fair sale conducted on business principles" at any time during the year.

In appearing before the Commission, Mr. Kerr, Assessor of the City of Belleville, had this to say with regard to the question of assessment:—"I think the Assessor should have a great deal of experience in the locality in which he is doing his work. I would suggest an inspector for all assessors, a Government man, and see that they do their duty. Probably it would require a great number for the Province of Ontario for instance. He would have to have some knowledge of the local localities, and I am of the opinion that a great many of the assessment rolls are copied from year to year. People have ideas of value as well as the assessor; they have to pay the money. I am of the opinion that the present Assessment Act is not lived up to. We have a good Assessment Act and laws, and if they were carried out there would not be as much grievance as there is existing to-day, and by having an inspector over us I think it would help us to toe the mark better. I had a great number of appeals before the Court of Revision the first year I was here. I am not a builder myself; never was. I got men, contractors who really did know, handling the work every day and knew values of buildings—we know the values of land very well for we get that from recent sales, but what value on buildings, or to what extent the buildings increased the value of the land, is a hard thing to come at."]

APPENDIX No. 14

Data for Chart of Farm Production

The figures upon which this chart is based are given in the following table:—

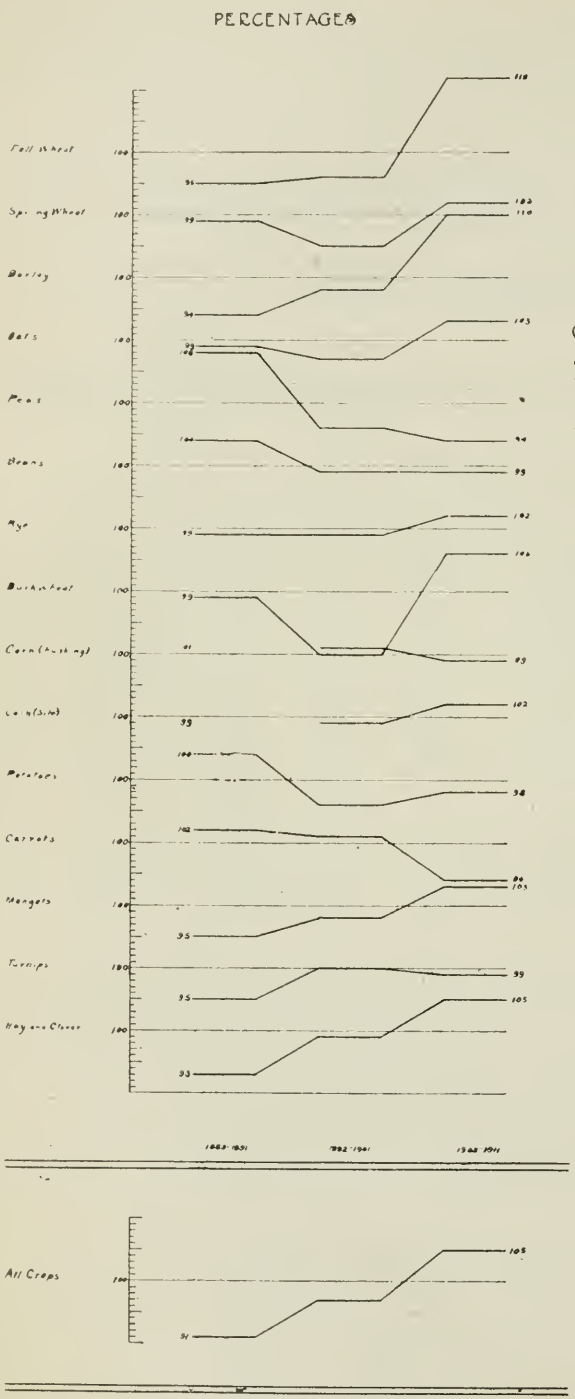
YIELD PER ACRE (BUSHELS).

Crop.	Average 1882-1912.	Average 1882-1891.	Average 1892-1901.	Average 1902-1911.	Average 1911.	Average 1912.
Fall wheat	21.0	20.0	20.1	23.5	21.4	19.8
Spring wheat	16.0	15.8	15.2	17.9	17.2	18.7
Barley	27.8	26.0	26.3	30.5	26.3	29.7
Oats	25.6	35.1	34.6	36.6	31.6	37.8
Peas	19.2	20.8	18.5	18.1	14.7	16.6
Beans	17.2	17.9	17.0	17.1	17.4	17.0
Rye	16.4	16.2	16.2	16.7	15.8	17.4
Buckwheat	20.7	20.4	18.7	21.9	20.4	26.3
Corn (husk)	71.4	....	72.2	70.6	71.1	72.9
Corn (silo)	11.4	....	11.3	11.6	11.2	10.5
Potatoes	116.0	121.0	111.0	113.0	8.6	134.0
Carrots	343.0	351.0	348.0	322.0	254.0	273.0
Mangles	458.0	437.0	447.0	470.0	434.0	460.0
Turnips	431.0	410.0	431.0	444.0	394.0	488.0
Hay (tons)	1.5	1.4	1.5	1.5	1.3	1.6

The figures in the table show the yield per acre in bushels of the various crops opposite which they appear. For the purposes of showing variations in yield on the chart, however, it was advisable first to express these variations in terms of a common denominator. This was done by giving to the figure representing the average over the whole period, 1882-1912, a value of 100, and interpreting the figures representing the averages for each of the ten year periods in terms of this value. The resultant figures serve as index numbers, the average for the thirty year period being the base. These figures are shown in the table below:—

INDEX NUMBER OF YIELD PER ACRE, WITH AVERAGE YIELD 1882-1911 AS BASE.

Crop.	1882-1891.	1892-1902.	1902-1911.
Fall wheat	95.2	95.8	111.9
Spring wheat	98.8	95.0	111.9
Barley	93.5	98.2	109.8
Oats	98.5	97.2	102.7
Peas	108.3	96.3	94.3
Beans	104.0	98.8	99.4
Rye	98.8	98.8	101.8
Buckwheat	98.5	90.4	105.7



ONTARIO: CHART OF FARM PRODUCTION: SHOWING ADVANCE AND DECLINES IN YIELD PER ACRE OF VARIOUS CROPS IN THE PROVINCE AND THE INCREASE IN YIELD FOR THE PROVINCE AS A WHOLE:

INDEX NUMBER OF YIELD PER ACRE, WITH AVERAGE YIELD 1882-1911 AS BASE.—Continued.

Crop.	1882-1891.	1892-1902.	1902-1911.
Corn (husk)	....	101.1	98.8
Corn (silo)	....	99.2	101.7
Potatoes	104.2	95.7	97.5
Carrots	102.2	104.4	93.9
Mangles	95.4	97.6	102.5
Turnips	95.2	100.0	99.4
Hay	92.5	99.2	105.5
All crops	90.68	96.59	104.51

In order to determine a figure indicative of an increase or decrease in the yield per acre for the Province the index numbers of all crops in each decade were allowed a "weight" in the final "average" equal to the proportion which their acreage bore to the total acreage of all the crops mentioned. This was done in order that the increase or decrease in the yield of every acre in the Province might be reflected in the final result.

As shown in the table, the yield represented by the figures 90.68 in the period 1882-1891 rose to 96.59 in the period 1892-1901, and to 104.51 in the period 1902-1903. The inference is that of the acreage under crop from year to year the yield per acre has been increasing appreciably during the last thirty years, and that this increase in the last decade has been much greater than the increase in the previous decade.

YIELD PER ACRE OF STAPLE CROPS, ONTARIO *vs.* AMERICAN STATES, 1911.

Name.	F. wheat. Bushels.	S. wheat. Bushels.	Oats. Bushels.	Barley. Bushels.	Potatoes. Bushels.	Hay. Tons.
Ontario	21.4	17.2	31.4	26.3	86	1.28
New York	19.5	....	29.5	25.0	74	1.02
Pennsylvania	13.5	....	28.3	25.0	56	1.00
Ohio	16.0	....	32.1	27.2	65	.98
Illinois	16.0	....	28.8	28.0	50	.82
Michigan	18.0	....	28.6	24.0	94	1.16
Wisconsin	17.5	14.5	29.8	25.0	116	1.20
Iowa	19.7	13.8	25.5	21.9	74	.80
Nebraska	13.8	10.0	13.9	11.0	52	.85
Indiana	14.7	....	28.7	26.5	58	.94

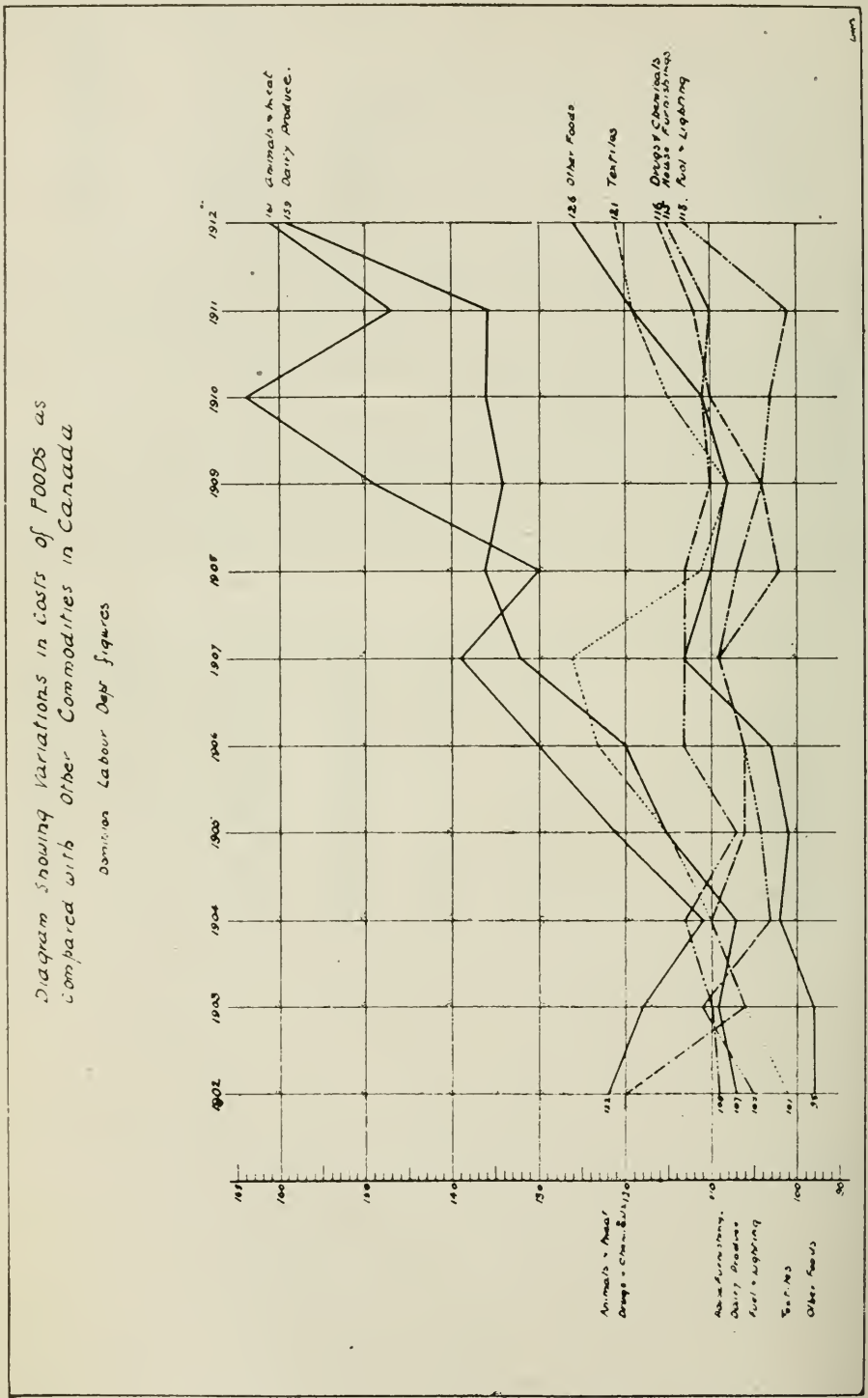


Diagram showing Variations in Costs of FOODS as compared with Other Commodities in Canada
Dominion Labour Dept figures
1902
1903
1904
1905
1906
1907
1908
1909
1910
1911
1912
Animals & Meat
Dairy Produce
Other Foods
Textiles
Drugs & Chemicals
House Furnishings
Fuel & Lighting
Animals & Meat
Dairy Produce
Fuel & Lighting
Textiles
Other Foods

APPENDIX No. 15

Toll Roads

TOLL ROADS.

The toll roads remaining in the Province are as follows:—

	Estimated Length.
Carleton County:	
1. The By-town and Nepean Road	8⅝ miles.
2. The Richmond Road	7 "
3. The Nepean and North Gower Road	5⅛ "
4. The River Branch of the Nepean and N. Gower Road	2 "
5. Hunt Club Branch of the Gloucester and Metcalfe Road	3⅝ "
6. Gloucester and Metcalfe Road	9⅝ "
7. The Russell Road	4¾ "
8. The Montreal Road	8¼ "
Lambton County:	
Sarnia and Florence Plank Road	11 "
Brant County:	
Brantford and Paris Road	6 "
Brantford and Oakland Road	6 "
York County:	
Holland River Road	3 "
Northumberland and Durham Counties:	
Cobourg and Port Hope Road	6 "
Cobourg and Grafton Road	5 "
Cobourg and Baltimore Road	4 "
Leeds and Grenville Counties:	
Brockville and Prescott Road	12 "
Total	100 "

It has been the general experience in Ontario, where toll roads have been acquired and afterwards maintained by townships, that they have fallen into neglect, due to the tendency in townships to try to bring all roads to a uniform standard, with a consequent result that main roads, demanding large expenditure, are starved. Should negotiations result in the purchase and improvement of these roads, it is desirable that they be retained as far as possible as portions of county systems, local, suburban or interurban.

Outside of the County of Carleton, there are now only eight toll roads in the Province, aggregating 53 miles in length. The majority of main highways in Ontario were originally constructed as toll roads, but the mileage has been steadily decreasing with the foregoing result. This has been facilitated by the Highway Improvement Act, under which toll roads have, since 1902, been acquired by the Counties of Lanark, Wentworth, Leeds, Grenville and Frontenac.

APPENDIX No. 16

Note on Report on Location of Road Material

NOTE ON REPORT ON LOCATION OF ROAD MATERIAL.

During the autumn of 1913, the Geological Survey of Canada (Federal Department of Mines) furnished the services of Mr. Leopold Reinecke of Yale University for the investigation of road materials in the province. Mr. Reinecke's "Preliminary Survey of the Materials Available for the Making of Roads in Ontario" has been received from the Director of the Geological Survey, and forms a valuable work of reference for the Commission.

This report is divided into six chapters, of which the last three deal with the location and the engineering value of the trap, felsite and gabbroic rocks (the igneous and metamorphic series), limestones and sandstones (the sedimentary series) and the gravels (unconsolidated series) of Ontario. A comparison of results obtained from the use of material of different formations according to traffic conditions is contained in these chapters, with a list of freight rates and other economic considerations that enter into the question. The minerals located by Mr. Reinecke were forwarded to the Laboratory of the United States Office of Public Roads in Washington and their value as road materials tested, as regards hardness, toughness, specific gravity, and cementing value and as to capacity of abrasion and absorption. The result of these tests are given in the individual cases, together with a list of averages derived from 3,000 minerals tested, and a chart of curves showing the relative toughness of such rocks as have a cementing value high enough to permit of their use on roads.

The conclusions of the survey are given in Chapter 1 both as to the location and value of the different series, with suggestions for future work in prospecting for stone and gravel. This chapter is followed by a summary of material suitable for country roads and contains a comparison of the effects of traffic upon gravel and macadam surfaces. The report also contains photographs of quarries and sand and gravel pits or banks, together with tables and charts of geological formations.

Acknowledgments for geological information and maps are made by Mr. Reinecke to the following Canadian authorities: Professors Coleman and Parks of the University of Toronto, Mr. M. Y. Williams of the Geological Survey of Canada and to Dr. W. G. Miller and other members of the Ontario Bureau of Mines.

A Reinforced Concrete Arch, 65 feet span, in York County, near Kleinburg.

Broken Stone Road in Frontenac County.

APPENDIX No. 17

Urban Municipalities of Ontario, Arranged in Order of Density of Population

Municipality	Acreage	Population	Population per acre	County
Newburg	3,200	494	.15	Lennox & Addington.
Holland Landing	1,834	352	.19	York.
Vienna	1,307	333	.25	Elgin.
Richmond	1,456	392	.27	Carleton.
Bayfield	1,780	504	.28	Huron.
Oil Springs	1,896	621	.33	Lambton.
Newboro'	1,073	489	.46	Leeds.
Wellington	1,500	800	.53	Prince Edward.
Wardsville	413	225	.54	Middlesex.
Hepworth	718	400	.55	Bruce.
Bradford	1,700	943	.55	Simcoe.
Lanark	1,109	722	.65	Lanark.
Iroquois	1,160	808	.70	Dundas.
Neustadt	669	483	.72	Grey.
Wroxeter	496	371	.75	Huron.
Killaloe Station	500	379	.76	Renfrew.
Thornbury	900	705	.78	Grey.
Casselman	1,200	948	.79	Russell.
Courtright	433	345	.80	Lambton.
Stayner	1 156	930	.80	Simcoe.
Cayuga	925	754	.82	Haldimand.
Tiverton	420	355	.84	Bruce.
Finch	476	421	.89	Stormont.
Bowmanville	2,919	2,633	.90	Durham.
Woodville	454	414	.91	Victoria.
Arkona	457	426	.93	Lambton.
Markdale	950	880	.93	Grey.
Newbury	500	474	.95	Middlesex.
Stirling	845	816	.97	Hastings.
Colborne	1,069	1,050	.98	Northumberland.
Shallow Lake	500	506	1.01	Grey.
Southampton	1,631	1,704	1.05	Bruce.
Arthur	994	1,075	1.08	Wellington.
Tara	500	547	1.09	Bruce.
Erin	457	512	1.10	Wellington.
Woodbridge	489	557	1.14	York.
Sandwich	2,000	2,302	1.16	Essex.
Springfield	408	477	1.17	Elgin.
Morrisburg	1,310	1,589	1.21	Dundas.
Streetsville	455	549	1.21	Peel.
Mitchell	1,400	1,696	1.21	Perth.
Wyoming	475	590	1.24	Lambton.
Tottenham	400	500	1.25	Simcoe.
Creemore	490	620	1.26	Simcoe.
Port Stanley	505	644	1.28	Elgin.
Port Rowan	500	642	1.28	Norfolk.

URBAN MUNICIPALITIES OF ONTARIO ARRANGED IN ORDER OF DENSITY OF POPULATION.—*Con.*

Municipality	Acreage	Population	Population per acre	County
Omemee	422	538	1.28	Victoria.
Ailsa Craig	445	579	1.30	Middlesex.
St. Mary's	2,683	3,555	1.33	Perth.
Thedford	439	587	1.34	Lambton.
Orangeville	1,732	2,321	1.34	Dufferin.
Sutton	488	657	1.35	York.
Bolton	500	682	1.36	Peel.
Clifford	440	599	1.36	Wellington.
Strathroy	2,165	2,969	1.37	Middlesex.
Kincardine	1,900	2,631	1.38	Bruce.
Hastings	559	770	1.38	Northumberland.
Dundalk	440	607	1.38	Grey.
Beeton	475	653	1.38	Simcoe.
Lucan	500	705	1.41	Middlesex.
Petrolea	2,700	3,913	1.45	Lambton.
Bloomfield	422	615	1.46	Prince Edward.
Exeter	1,050	1,519	1.46	Huron.
Merrickville	679	997	1.47	Grenville.
Point Edward	616	907	1.48	Lambton.
Delhi	500	741	1.48	Norfolk.
Richmond Hill	475	714	1.49	York.
Blyth	448	680	1.50	Huron.
Renfrew	2,400	3,634	1.51	Renfrew.
Cobden	469	719	1.53	Renfrew.
Paisley	500	779	1.55	Bruce.
Mount Forest	1,414	2,180	1.55	Wellington.
Forest	950	1,479	1.56	Lambton.
Listowel	1,500	2,337	1.56	Perth.
Bancroft	444	698	1.57	Hastings.
Belle River	346	548	1.58	Essex.
Caledonia	547	865	1.58	Haldimand.
Rodney	467	742	1.59	Elgin.
Bath	2,277	355	1.60	Lennox & Addington.
Hensall	490	785	1.60	Huron.
Durham	950	1,526	1.61	Grey.
Dutton	500	811	1.62	Elgin.
West Lorne	493	799	1.62	Elgin.
Maxville	500	807	1.62	Glengarry.
Athens	500	817	1.63	Leeds.
Georgetown	1,062	1,732	1.63	Halton.
Milverton	470	763	1.63	Perth.
Chesterville	500	820	1.64	Dundas.
Coldwater	350	570	1.66	Simcoe.
Aurora	1,100	1,819	1.66	York.
Teeswater	474	819	1.72	Bruce.
Collingwood	4,440	7,601	1.72	Simcoe.
Ayr	500	858	1.72	Waterloo.
Waterloo	2,800	4,800	1.72	Waterloo.
Sturgeon Point	222	385	1.74	Victoria.
Westport	500	877	1.76	Leeds.
Drayton	437	774	1.77	Wellington.
Beamsville	517	919	1.78	Lincoln.
Shelburne	625	1,124	1.80	Dufferin.
Port Perry	650	1,172	1.81	Ontario.
Marmora	470	849	1.81	Hastings.
Oakville	1,303	2,362	1.81	Halton.
Fergus	850	1,552	1.83	Wellington.
Alvinston	446	820	1.84	Lambton.
Chippawa	400	746	1.86	Welland.
Palmerston	960	1,790	1.87	Wellington.
Glencoe	454	853	1.88	Middlesex.
Essex	700	1,318	1.88	Essex.
New Hamburg	950	1,790	1.88	Waterloo.
Meaford	1,500	2,886	1.93	Grey.
Thamesville	387	749	1.94	Kent.

URBAN MUNICIPALITIES OF ONTARIO ARRANGED IN ORDER OF DENSITY OF POPULATION.—*Con.*

Municipality	Acreage	Population	Population per acre	County
Harriston	866	1,684	1.95	Wellington.
Victoria Harbour	740	1,543	1.96	Simcoe.
Port Elgin	600	1,190	1.98	Bruce.
Norwood	395	788	1.99	Peterborough.
Fenelon Falls	547	1,087	1.99	Victoria.
Garden Island	77	155	2.02	Frontenac.
Elora	600	1,224	2.04	Wellington.
Trenton	1,800	3,692	2.05	Hastings.
Lucknow	500	1,051	2.10	Bruce.
North Toronto	2,500	5,271	2.10	York.
Waterdown	351	747	2.13	Wentworth.
Norwich	550	1,170	2.13	Oxford.
Fort Erie	678	1,452	2.14	Welland.
Bobcaygeon	443	931	2.15	Victoria.
Penetanguishene	1,717	3,689	2.16	Simcoe.
Markham	464	1,003	2.17	York.
Cannington	463	1,005	2.18	Ontario.
Cobourg	2,417	5,321	2.21	Northumberland.
Beaverton	458	1,007	2.21	Ontario.
Ingersoll	2,000	4,869	2.22	Oxford.
Winchester	500	1,121	2.25	Dundas.
Milbrook	360	813	2.26	Durham.
Walkerton	1,350	3,045	2.26	Bruce.
Jarvis	271	616	2.27	Haldimand.
Mimico	484	1,137	2.35	York.
Prescott	1,182	2,775	2.35	Grenville.
Tavistock	396	934	2.36	Oxford.
Waterford	463	1,110	2.40	Norfolk.
Perth	1,400	3,352	2.48	Lanark.
Madoc	424	1,030	2.43	Hastings.
Bridgeburg	678	1,671	2.47	Welland.
Brussels	422	1,054	2.50	Huron.
Clinton	903	2,265	2.52	Huron.
Barrie	2,550	6,417	2.52	Simcoe.
Tilbury	577	1,446	2.52	Kent.
Stouffville	392	1,004	2.57	York.
Dresden	642	1,652	2.57	Kent.
Parkhill	525	1,346	2.57	Middlesex.
Cardinal	450	1,164	2.59	Grenville.
Alliston	500	1,298	2.59	Simcoe.
Thorold	826	2,148	2.60	Welland.
Grand Valley	262	686	2.62	Dufferin.
Lakefield	515	1,350	2.63	Peterborough.
Brampton	1,193	3,141	2.63	Peel.
Niagara	654	1,724	2.67	Lincoln.
Port Dover	413	1,118	2.71	Norfolk.
Blenheim	490	1,332	2.73	Kent.
Chesley	583	1,726	2.79	Bruce.
Grimsby	509	1,487	2.94	Lincoln.
Preston	1,300	3,831	2.95	Waterloo.
Watford	400	1,198	2.97	Lambton.
Gananoque	1,237	3,708	3.01	Leeds.
Wiarton	756	2,722	3.02	Bruce.
Hagersville	349	1,050	3.02	Haldimand.
Chatsworth	122	372	3.06	Grey.
Oshawa	2,400	7,417	3.10	Ontario.
Uxbridge	500	1,567	3.12	Ontario.
Burlington	553	1,725	3.13	Halton.
Newcastle	1,929	604	3.14	Durham.
Bothwell	231	755	3.26	Kent.
Tweed	398	1,300	3.27	Hastings.
Leamington	815	2,681	3.29	Essex.
Dunnville	938	3,146	3.35	Haldimand.

URBAN MUNICIPALITIES OF ONTARIO ARRANGED IN ORDER OF DENSITY OF POPULATION.—*Con.*

Municipality	Acreage	Population	Population per acre	County
Kemptville	359	1,200	3.37	Grenville.
Ridgetown	621	2,120	3.42	Kent.
Almonte	700	2,517	3.59	Lanark.
Arnprior	1,121	4,164	3.71	Renfrew.
Kingsville	446	1,684	3.79	Essex.
Deseronto	530	2,005	3.79	Hastings.
Acton	429	1,627	3.80	Halton.
Aylmer	549	2,084	3.81	Elgin.
Eganville	310	1,180	3.81	Renfrew.
Wingham	650	2,481	3.82	Huron.
Weston	450	1,728	3.85	York.
Embro	1,247	481	3.85	Oxford.
Seaforth	550	2,130	3.86	Huron.
Merritton	450	1,767	3.93	Lincoln.
Havelock	360	1,407	3.93	Peterborough.
Orillia	1,600	6,478	4.05	Simcoe.
Milton	400	1,665	4.17	Halton.
Elmira	433	1,811	4.18	Waterloo.
Eastview	669	2,789	4.18	Carleton.
Owen Sound	2,909	12,383	4.25	Grey.
Portsmouth	155	660	4.27	Frontenac.
Welland	1,200	5,128	4.28	Welland.
Port Hope	1,089	4,795	4.41	Durham.
Napanee	600	2,690	4.50	Lennox & Addington.
Lancaster	130	588	4.53	Glengarry.
Simcoe	794	3,610	4.55	Norfolk.
Rockland	700	3,199	4.58	Russell.
Newmarket	725	3,396	4.58	York.
Guelph	3,200	15,107	4.73	Wellington.
Goderich	1,000	4,795	4.79	Huron.
Lindsay	1,550	7,414	4.80	Victoria.
Brighton	2,706	1,306	4.83	Northumberland.
Berlin	3,095	15,338	4.96	Waterloo.
Hanover	520	2,640	5.08	Grey.
Stratford	2,835	14,596	5.15	Perth.
Campbellford	600	3,197	5.32	Northumberland.
St. Catharines	2,400	13,403	5.59	Lincoln.
Paris	760	4,278	5.62	Brant.
Alexandria	400	2,253	5.65	Glengarry.
Hespeler	472	2,574	5.80	Waterloo.
Port Colborne	253	1,472	5.82	Welland.
Smith's Falls	1,030	6,146	5.95	Lanark.
Whitby	3,800	2,279	6.00	Ontario.
Port Dalhousie	187	1,123	6.03	Lincoln.
Belleville	1,700	10,440	6.14	Hastings.
Wallaceburg	577	3,581	6.24	Kent.
Picton	552	3,456	6.27	Prince Edward.
Chatham	1,650	10,463	6.35	Kent.
Niagara Falls	1,414	9,004	6.38	Welland.
Sarnia	1,450	9,459	6.53	Lambton.
Carleton Place	550	3,617	6.58	Lanark.
Woodstock	1,529	10,091	6.61	Oxford.
Peterboro'	2,808	19,300	6.88	Peterborough.
Amherstburg	358	2,492	6.96	Essex.
Galt	1,477	10,333	7.02	Waterloo.
Midland	582	4,238	7.28	Simcoe.
Brockville	1,242	9,239	7.51	Leeds.
Dundas	550	4,141	7.52	Wentworth.
Walkerville	436	3,349	7.68	Essex.

URBAN MUNICIPALITIES OF ONTARIO ARRANGED IN ORDER OF DENSITY OF POPULATION.—*Con.*

Municipality	Acreage	Population	Population per acre	County
Brantford	2,957	24,084	8.14	Brant.
Kingston	2,300	18,828	8.20	Frontenac.
St. Thomas	1,800	15,240	8.49	Elgin.
Pembroke	607	5,382	8.89	Renfrew.
Windsor	2,020	18,220	9.10	Essex.
Cornwall	680	6,268	9.22	Stormont.
London	4,478	48,123	10.80	Middlesex.
Hamilton	6,260	82,095	13.15	Wentworth.
Ottawa	5,089	90,520	17.82	Carleton.
Toronto	17,920	374,666	20.90	York.

APPENDIX No. 18:—TOWNSHIP ROAD EXPENDITURES, 1900, 1905, 1910.

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1900

Township Municipality	Assessed area in acres	Assessed population, 1900	Total values assessed, 1900	Total municipal and school taxes 1900		Total expenditure on roads and bridges, 1900	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
Brant:	Acres		$	$	$	$		$ c.		$ c.
Brantford	71,680	5,342	3,751,041	24,642	24,950	4,183	6.6	4 61	1.1	75
Burford	66,566	4,266	2,195,820	19,831	19,773	5,530	9.0	4 65	2.5	1 30
Dumfries, S.	46,670	2,570	2,314,892	13,536	13,543	1,842	5.8	5 27	.8	72
Oakland	10,364	685	395,780	3,372	3,330	165	8.5	4 92	.4	24
Onondaga	20,564	1,108	704,301	5,072	5,173	1,311	7.2	4 58	1.9	1 18
Bruce:										
Albemarle:	55,128	1,335	175,719	4,190	4,573	792	23.4	3 08	4.5	59
Amabel	64,228	3,230	634,180	10,799	8,296	1,646	17.0	3 34	2.6	51
Arran	54,102	2,517	1,450,920	8,623	8,873	1,248	5.9	3 43	.9	49
Brant	69,598	3,991	1,987,325	17,281	16,271	8,344	8.7	4 33	4.2	2 09
Bruce	67,471	2,960	1,385,435	13,003	11,988	3,886	9.4	4 39	2.8	1 31
Carrick	59,498	4,447	2,088,529	14,213	14,212	1,359	6.8	3 20	.6	30
Culross	56,756	3,007	1,721,650	9,659	9,797	1,329	5.6	3 21	.8	44
Eastnor	50,041	1,512	324,436	4,751	5,623	998	14.6	3 14	3.1	66
Elderslie	54,418	2,248	1,292,080	10,034	10,056	2,443	7.8	4 46	1.9	1 09
Greenock	64,839	2,738	1,400,315	10,413	10,062	2,854	7.4	3 80	2.0	1 04
Huron	57,442	3,308	1,497,926	15,669	14,909	5,499	10.5	4 74	3.7	1 66
Kincardine	59,200	2,986	1,561,420	11,075	10,579	2,942	7.1	3 71	1.9	99
Kinloss	46,275	2,264	1,139,585	7,865	8,171	1,768	6.9	3 47	1.6	78
Lindsay & St. Edmunds	106,159	989	98,324	3,470	4,506	960	35.3	3 51	9.8	97
Saugeen	36,059	1,391	840,270	5,676	5,678	1,576	6.8	4 08	1.9	1 13
Carleton:										
Fitzroy	60,187	2,400	762,367	10,269	11,702	2,176	13.5	4 28	2.9	91
Gloucester	84,972	6,118	1,414,000	21,722	20,765	3,568	15.4	3 55	2.5	58
Goulbourn	65,125	2,517	839,350	9,139	10,587	1,515	10.9	3 63	1.8	60
Gower, N.	33,218	2,115	884,500	7,891	9,794	982	8.9	3 73	1.1	46
Huntley	61,869	2,142	450,940	7,087	7,668	1,345	15.7	3 31	3.0	63
March	28,029	1,127	366,756	3,336	3,133	408	9.1	2 96	1.1	36
Marlborough	56,971	1,541	456,665	4,838	4,341	373	10.6	3 14	.8	24
Nepean	57,908	4,809	2,305,461	17,016	16,828	2,171	7.4	3 54	.9	45
Osgoode	91,170	4,699	1,524,825	16,976	16,029	3,378	11.1	3 61	2.2	72
Torbolton	29,067	860	143,700	3,118	2,636	316	21.7	3 63	2.2	37
Dufferin:										
Amaranth	63,433	2,575	1,071,760	15,473	17,012	1,463	14.4	6 01	1.4	57
Garafraxa, E.	40,661	1,807	1,119,350	10,521	10,531	2,849	9.4	5 83	2.5	1 58

Luther, E.	38,037	1,579	561,015	8,593	8,590	878	15.3	5 44	1.6	56
Melancthon	74,615	3,251	825,076	12,421	13,681	1,607	15.1	3 82	1.9	49
Mono	69,136	3,133	1,592,905	12,146	12,849	1,671	7.6	3 88	1.0	53
Mulmur	70,221	2,910	1,301,325	12,669	14,336	1,629	9.7	4 35	1.3	56
Dundas:										
Matilda	62,602	3,845	1,336,336	18,810	21,829	2,055	14.1	4 89	1.5	53
Mountain	56,648	3,311	1,343,648	13,156	12,220	3,341	9.8	3 97	2.5	1 01
Williamsburg	59,689	3,725	1,464,742	16,825	16,832	4,207	11.5	4 52	2.9	1 13
Winchester	57,048	3,141	1,341,535	21,417	22,745	4,027	16.0	6 82	3.0	1 28
Durham:										
Cartwright	37,412	1,748	725,520	5,125	6,961	658	7.1	2 93	.9	38
Cavan	62,596	2,643	1,556,675	10,637	10,852	1,840	6.8	4 02	1.2	70
Clarke	68,232	3,705	1,798,405	15,401	14,053	1,981	8.6	4 16	1.1	53
Darlington	68,586	4,102	2,411,425	18,822	17,251	3,557	7.8	4 59	1.5	87
Hope	63,918	3,268	2,288,182	10,668	11,028	1,726	4.7	3 26	.8	53
Manvers	69,645	2,860	1,219,240	10,363	11,221	1,916	8.5	3 62	1.6	67
Elgin:										
Aldborough:	74,886	4,488	1,666,310	25,910	28,279	5,256	15.5	5 77	3.2	1 17
Bayham	56,498	3,496	1,067,775	18,790	17,634	4,054	17.6	5 37	3.8	1 16
Dorchester, S.	30,558	1,474	1,065,790	10,646	11,152	1,860	10.0	7 22	1.7	1 26
Dunwich	69,331	3,197	1,736,495	22,169	20,198	6,024	12.8	6 93	3.5	1 88
Malahide	62,353	3,715	1,920,610	24,319	24,761	7,207	12.7	6 55	3.8	1 94
Southwold	72,575	3,703	2,493,528	23,727	23,534	6,288	9.5	6 41	2.5	1 70
Yarmouth	69,595	4,720	2,682,087	28,025	27,266	12,369	10.4	5 94	4.6	2 62
Essex:										
Anderdon	22,925	1,906	630,045	8,707	9,376	1,736	13.8	4 57	2.7	91
Colchester, N.	30,612	1,848	597,363	14,274	15,563	2,064	23.9	7 72	3.5	1 12
Colchester, S.	34,480	2,761	1,007,318	17,837	18,410	2,572	17.7	6 46	2.6	93
Gosfield, N.	28,013	1,969	738,405	11,293	12,217	716	15.3	5 74	1.0	36
Gosfield, S.	30,038	2,369	1,040,895	14,895	16,125	1,664	14.3	6 29	1.6	70
Maidstone	44,547	2,846	806,970	17,082	17,558	2,408	21.2	6 00	3.0	85
Malden	20,962	1,290	713,045	7,062	7,785	2,134	9.9	5 47	3.0	1 65
Mersea	62,025	4,172	1,807,226	28,742	30,862	3,588	15.9	6 89	2.0	86
Rochester	32,392	2,550	948,205	11,189	11,477	1,164	11.8	4 39	1.2	46
Sandwich, E.	18,717	2,238	628,895	13,448	13,853	1,354	21.4	6 01	2.2	61
Sandwich, S.	23,532	1,633	588,618	10,691	11,695	1,485	18.2	6 55	2.5	91
Sandwich, W.	23,338	2,476	687,406	13,440	12,710	3,184	19.6	5 43	4.6	1 29
Tilbury, N.	26,743	2,048	646,710	11,663	11,272	888	18.0	5 69	1.4	43
Tilbury, W.	22,955	2,160	636,125	16,096	15,221	1,203	25.3	7 45	1.9	56
(Pelee Island	9,787	620	283,602	7,552	8,716	931	26.6	12 18	3.2	1 50)
Frontenac:										
Barrie	24,442	521	40,012	1,470	1,416	26	36.7	2 82	.6	05
Bedford	63,886	1,446	179,163	5,230	5,427	503	29.2	3 62	2.8	35
Clarendon & Miller	46,064	874	79,607	2,241	2,543	96	28.2	2 56	1.2	11
Hinchinbrooke	68,929	1,219	189,916	4,758	5,439	972	25.1	3 90	5.1	80

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1900—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1900	Total values assessed, 1900	Total municipal and school taxes 1900		Total expenditure on roads and bridges, 1900	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Howe Island	8,025	342	52,755	1,480	1,661	59	28.1	4 33	1.1	17
Kennebec	40,278	1,363	90,886	2,753	3,169	250	30.3	2 02	2.8	18
Kingston	51,831	2,480	1,089,986	14,078	14,463	1,319	12.9	5 68	1.2	53
Loughborough	50,509	1,688	383,452	7,463	7,836	781	19.5	4 42	2.0	46
Olden	51,569	976	109,779	4,119	4,251	220	37.5	4 22	2.0	23
Oso	42,411	969	91,688	3,540	3,826	179	38.6	3 65	2.0	18
Palmerston & Canonto	55,155	1,076	64,366	2,265	2,237	189	35.2	2 11	2.3	18
Pittsburg	48,156	2,106	810,663	12,860	12,437	3,376	15.9	6 11	4.2	1 60
Portland	52,958	2,147	462,308	8,509	8,981	942	18.4	3 96	2.0	44
Storrington	56,005	1,726	417,705	8,593	8,182	487	20.6	4 98	1.1	28
Wolfe Island	30,768	1,606	595,400	8,308	9,280	360	14.0	5 17	.6	22
Glengarry:										
Charlottenburg	78,600	4,817	1,178,960	16,953	16,388	1,016	14.4	3 52	.9	21
Kenyon	78,610	3,866	739,410	10,961	10,563	1,929	14.8	2 84	2.6	52
Lancaster	57,101	3,533	923,883	10,605	10,356	1,753	11.5	3 00	1.9	50
Lochiel	71,459	4,391	1,002,075	11,537	11,509	1,177	11.5	2 63	1.2	27
Grenville:										
Augusta	74,572	3,649	1,299,860	12,570	10,665	1,443	9.7	3 44	1.1	40
Edwardsburg	69,538	3,784	1,169,375	12,497	12,712	1,701	10.7	3 30	1.5	45
Gower, S.	21,736	790	315,480	2,682	2,299	292	8.5	3 39	.9	37
Oxford-on-Rideau	59,058	2,735	787,535	9,557	8,573	936	12.1	3 49	1.2	34
Wolford	46,428	1,694	936,754	6,379	6,256	436	6.8	3 77	.5	26
Grey:										
Artemesia	69,015	3,495	1,023,300	13,110	13,362	3,083	12.8	3 75	3.0	88
Bentinck	73,613	3,284	1,088,020	11,929	12,899	2,957	11.0	3 63	2.7	90
Collingwood	68,000	3,636	1,378,016	16,024	16,267	3,245	11.6	4 41	2.4	89
Derby	40,236	1,886	776,250	7,652	7,654	2,342	9.9	4 06	3.0	1 24
Egremont	72,685	3,190	1,543,130	12,103	12,049	476	7.8	3 79	.3	15
Euphrasia	72,000	3,241	1,268,465	11,285	14,097	2,165	8.9	3 48	1.7	67
Glenelg	67,611	2,733	664,547	8,801	8,751	2,439	13.2	3 22	3.7	89
Holland	68,192	3,127	783,215	8,107	8,423	859	10.4	2 59	1.1	27
Keppel	89,298	3,563	697,235	11,352	11,626	2,873	16.3	3 19	4.1	81
Normanby	68,144	4,412	1,475,135	14,244	14,112	2,229	9.7	3 23	1.5	51
Osprey	70,669	3,033	830,570	9,009	11,030	1,337	10.8	2 97	1.6	44
Proton	80,107	2,978	833,175	9,870	10,224	1,358	11.8	3 31	1.6	46

St. Vincent	63,340	2,811	1,389,320	12,419	12,690	2,542	8.9	4 42	1.8	90
Sarawak	10,922	1,251	253,979	4,476	4,567	867	17.6	3 58	3.4	69
Sullivan	73,630	3,299	1,168,925	10,646	10,668	1,325	9.1	3 23	1.1	40
Sydenham	73,207	3,400	1,192,800	13,086	13,021	4,014	11.0	3 85	3.4	1 18
Haldimand:										
Canborough	21,454	914	353,007	3,829	3,868	355	10.8	4 19	1.0	39
Cayuga, N.	32,742	1,515	732,409	5,762	5,650	637	7.9	3 80	.9	42
Cayuga, S.	13,261	770	394,900	2,602	2,370	37	6.6	3 38	.1	05
Dunn	14,858	826	397,770	3,365	3,361	229	8.5	4 07	.6	28
Moulton	27,000	1,818	591,880	5,981	5,326	368	10.1	3 29	.6	20
Oneida	32,577	1,466	948,810	6,844	6,979	2,458	7.2	4 67	2.5	1 68
Rainham	25,659	1,639	543,200	6,349	6,346	1,951	11.7	3 87	3.6	1 19
Seneca	41,746	1,815	884,900	8,296	8,289	1,142	9.4	4 57	1.3	63
Sherbrooke	4,680	383	151,346	1,341	1,300	114	8.9	3 50	.8	30
Walpole	6,652	4,186	1,949,860	19,687	19,678	3,356	10.1	4 70	1.7	85
Haliburton:										
Anson & Hindon	12,892	279	35,149	935	967	107	26.6	3 35	3.0	38
Cardiff	25,287	590	33,893	2,475	2,127	64	73.0	4 19	1.9	11
Dysart & Guilford	366,522	990	133,303	4,854	4,917	1,635	36.4	4 90	12.3	1 65
Glamorgan	20,333	475	43,513	1,352	1,336	87	31.1	2 85	2.0	18
Lutterworth	23,834	424	35,903	1,368	1,618	126	38.1	3 23	3.5	30
Minden	36,566	1,166	85,540	3,376	4,037	379	39.5	2 89	4.4	33
Monmouth	25,013	508	30,579	2,227	1,913	8	72.8	4 38	.3	02
Sherborne & McClintock	10,116	214	19,198	745	424	564	38.8	3 48	29.4	2 64
Snowdon	33,016	726	69,451	3,249	3,034	166	46.8	4 48	2.4	23
Stanhope	15,704	486	24,501	1,251	1,734	142	51.1	2 57	5.8	29
Halton:										
Esquesing	67,217	3,718	2,288,280	16,285	16,695	5,408	7.1	4 38	2.4	1 45
Nassagaweya	44,795	2,274	1,005,735	7,499	8,376	2,138	7.5	3 30	2.1	94
Nelson	46,346	2,685	1,774,120	11,652	11,501	3,286	6.6	4 34	1.9	1 22
Trafalgar	66,984	3,405	2,464,304	15,428	15,153	4,198	6.3	4 53	1.7	1 23
Hastings:										
Bangor, Wicklow & McClure	33,716	1,013	41,542	2,075	1,620	286	49.9	2 05	6.9	28
Carlow	22,062	611	49,790	1,757	1,273	289	35.3	2 88	5.8	47
Dungannon	33,941	682	49,599	2,373	2,524	211	47.8	3 48	4.3	31
Elzevir and Grimsthorpe	64,555	1,296	97,552	3,468	3,872	669	35.6	2 68	6.9	54
Faraday	48,657	1,032	79,590	3,112	3,010	354	39.1	3 02	4.4	34
Hungerford	93,380	3,492	743,465	11,567	13,358	1,009	15.6	3 31	1.4	29
Huntingdon	53,849	2,462	431,397	7,133	8,149	266	16.5	2 89	.6	11
Limerick	44,443	558	54,303	1,186	1,046	353	21.8	2 13	6.5	63
Madoc	67,747	2,652	491,675	10,459	13,116	378	21.3	3 94	.8	14
Marmora & Lake	103,517	1,887	305,778	7,897	9,126	1,122	25.8	4 21	3.7	60
Mayo	19,035	557	27,140	1,411	1,390	279	52.0	2 53	10.3	50
Monteagle & Herschel	67,052	1,813	70,949	3,101	2,583	261	43.7	1 71	3.7	14
Rawdon	66,129	3,143	1,180,220	12,772	13,783	785	10.8	4 06	.6	22

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1900—Continued.

Township Municipality	Assessed area in areas	Assessed population, 1900	Total values assessed, 1900	Total municipal and school taxes 1900		Total expenditure on roads and bridges, 1900	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Sidney	69,577	3,973	2,049,540	19,818	20,468	2,314	9.7	4 99	1.1	58
Thurlow	53,458	4,194	1,920,400	17,512	18,083	1,451	9.1	4 18	.8	35
Tudor & Cashel	59,952	843	67,008	2,576	2,651	581	38.4	3 06	8.7	69
Tyendinaga	77,048	3,734	1,416,210	16,651	15,299	878	11.8	4 46	.6	24
Wollaston	52,391	722	64,105	2,219	2,105	451	34.6	3 07	7.0	62
Huron:										
Ashfield	63,871	3,176	1,684,445	13,522	14,408	3,969	8.0	4 26	2.4	1 25
Colborne	34,083	1,802	1,077,200	7,251	6,918	2,035	6.7	4 02	1.9	1 13
Goderich	52,307	2,413	1,486,400	9,481	10,202	2,418	6.4	3 93	1.6	1 00
Grey	64,778	3,389	1,728,400	12,979	12,946	2,531	7.5	3 83	1.5	75
Hay	52,501	3,452	1,789,860	13,373	13,124	3,049	7.5	3 87	1.7	88
Howick	67,575	3,781	2,144,275	13,979	15,856	2,566	6.5	3 70	1.2	68
Hullett	53,558	2,838	1,966,210	12,387	12,302	3,307	6.3	4 36	1.7	1 17
McKillop	52,110	2,653	2,000,700	11,261	11,316	4,286	5.6	4 24	2.1	1 62
Morris	55,090	2,485	1,745,285	8,943	10,481	1,496	5.1	3 60	.9	60
Stanley	43,313	2,146	1,665,755	9,477	9,377	2,518	5.7	4 42	1.5	1 17
Stephen	56,771	4,098	1,802,405	14,308	14,308	2,955	8.0	3 49	1.6	72
Tuckersmith	40,738	2,457	1,961,835	10,764	10,938	4,123	5.5	4 38	2.1	1 68
Turnberry	35,638	2,161	1,232,780	7,482	7,425	1,051	6.1	3 46	.9	49
Usborne	42,678	2,326	1,809,575	11,116	11,106	2,809	6.1	4 78	1.6	1 21
Wawanosh, E.	41,734	1,941	1,427,960	6,649	6,798	1,254	4.7	3 43	.9	65
Wawanosh, W.	41,696	2,055	1,123,500	7,889	8,790	1,430	7.0	3 84	1.3	70
Kent:										
Camden	40,705	2,523	1,015,140	15,060	16,009	3,624	14.8	5 97	3.6	1 44
Chatham	84,480	5,099	1,991,639	41,863	42,413	3,433	21.0	8 21	1.7	67
Dover	68,058	4,234	1,740,724	29,083	38,685	658	16.7	6 87	.4	16
Harwich	88,308	4,503	3,676,571	28,010	30,304	4,417	7.6	6 22	1.2	98
Howard	58,449	3,504	2,451,060	19,979	21,451	3,126	8.2	5 70	1.3	89
Orford	49,605	2,764	1,430,280	15,749	15,583	2,584	11.0	5 70	1.8	93
Raleigh	71,369	4,499	2,494,721	33,243	34,580	2,185	13.3	7 39	.9	49
Romney	26,397	1,850	746,813	17,426	15,345	1,122	23.3	9 42	1.6	66
Tilbury, E.	54,711	3,329	1,510,725	30,182	28,968	2,395	20.0	9 07	1.6	72
Zone	25,167	1,197	599,520	6,430	5,733	799	10.7	5 37	1.3	67
Lambton:										
Bosanquet	70,982	2,488	1,525,604	13,453	13,457	2,931	8.8	5 41	1.9	1 18

Brooke	73,999	3,278	1,817,860	26,789	25,887	4,908	14.7	8 17	2.7	1 50
Dawn	65,524	3,389	889,105	21,663	18,310	2,511	24.4	6 39	2.8	74
Enniskillen	81,841	4,614	1,464,085	30,320	32,309	5,589	20.7	6 57	3.5	1 21
Euphemia	39,172	2,210	989,552	9,606	9,935	1,655	9.7	4 35	1.7	75
Moore	73,260	4,463	1,808,715	27,104	27,674	3,397	15.0	6 07	1.9	76
Plympton	75,015	3,342	2,047,555	21,021	19,583	3,816	10.3	6 29	1.9	1 14
Sarnia	38,347	2,064	775,029	16,343	13,855	1,593	21.1	7 92	2.1	77
Sombra	72,017	3,749	1,012,120	21,632	23,327	3,014	21.4	5 77	3.0	80
Warwick	70,129	3,087	2,013,600	15,544	16,503	3,442	7.7	5 04	1.7	1 11
Lanark:										
Bathurst	61,712	2,440	806,430	7,857	7,804	701	9.7	3 22	.9	29
Beckwith	56,904	1,655	500,220	5,986	5,987	1,900	12.0	3 62	3.8	1 15
Burgess, N.	32,788	867	187,485	2,307	2,165	193	12.3	2 66	1.0	22
Dalhousie & Sherbrooke, N.	72,558	1,729	252,293	4,484	4,751	832	17.8	2 59	3.3	48
Darling	45,310	720	69,098	1,679	1,767	178	24.3	2 33	2.6	25
Drummond	57,787	1,904	709,124	7,326	7,236	1,753	10.3	3 85	2.5	92
Elmsley, N.	28,228	1,065	375,630	3,277	3,372	330	8.7	3 08	.9	31
Lanark	57,798	1,698	440,130	5,228	5,962	468	11.9	3 08	1.1	28
Lavant	44,753	485	56,100	1,693	1,748	151	30.2	3 49	2.7	31
Montague	62,622	2,208	583,265	6,724	6,571	952	11.5	3 05	1.6	42
Pakenham	56,291	1,915	618,924	7,060	7,062	1,041	11.4	3 69	1.7	54
Ramsay	61,408	2,084	680,750	9,926	9,904	2,876	14.6	4 76	4.2	1 38
Sherbrooke, S.	36,990	815	91,006	1,735	1,877	117	19.1	2 13	1.3	14
Leeds:										
Bastard and Burgess, S.	56,246	2,684	744,255	10,274	9,446	682	13.8	3 83	.9	25
Crosby, N.	43,284	1,805	375,264	6,882	7,330	402	18.3	3 81	1.1	22
Crosby, S.	36,733	1,591	387,876	6,250	6,291	409	16.1	3 93	1.1	26
Elizabethtown	78,000	3,849	1,396,333	15,275	16,445	2,453	10.9	3 97	1.8	64
Elmsley, S.	22,258	745	456,050	2,880	2,878	285	6.3	3 87	.6	36
Kitley	47,012	1,893	1,037,850	7,476	7,632	1,546	7.2	3 95	1.5	82
Leeds & Lansdowne, F.	56,350	2,671	1,019,790	12,871	12,927	4,709	12.6	4 82	4.6	1 76
Leeds & Lansdowne, R.	44,472	2,262	575,070	8,348	7,691	1,388	14.5	3 69	2.4	61
Yonge & Escott, F.	54,902	2,191	715,615	12,214	12,223	1,938	17.1	5 57	2.7	88
Yonge & Escott, R.	27,334	1,025	399,410	5,972	6,459	540	15.0	5 83	1.4	53
Lennox and Addington:										
Adolphustown	11,495	487	342,304	2,738	2,735	173	8.0	5 62	.5	36
Amherst Island	14,521	834	349,030	3,403	3,384	267	9.7	4 08	.8	32
Camden, E.	86,356	5,262	1,457,740	21,346	22,309	5,623	14.6	4 06	3.9	1 07
Denbigh, Abinger and Ashby	44,278	1,043	53,999	1,878	1,607	187	34.8	1 80	3.5	18
Ernestown	61,236	3,160	1,460,980	14,419	15,457	1,952	9.9	4 56	1.3	62
Fredericksburg, N.	23,437	1,414	713,275	6,857	6,781	1,027	9.6	4 85	1.4	73
Fredericksburg, S.	20,340	1,018	568,190	5,688	5,468	689	10.0	5 59	1.2	68
Kaladar, Anglesea and Effingham	57,756	1,257	71,811	2,821	2,769	151	39.3	2 24	2.1	12
Richmond	49,831	2,176	860,985	10,535	11,095	1,870	12.2	4 84	2.2	86
Sheffield	68,978	2,025	671,972	7,024	8,843	562	10.5	3 47	.8	28

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1900—Continued.

Township municipality	Assessed area in acres	Assessed population, 1900	Total values assessed, 1900	Total municipal and school taxes 1900		Total expenditure on roads and bridges, 1900	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$ c.	$	$	$		$ c.		$ c.
Lincoln:										
Caistor	32,774	1,730	663,660	5,720	5,578	1,068	8.6	3 31	1.6	62
Clinton	24,716	1,831	1,043,823	9,784	9,906	2,041	9.4	5 34	2.0	1 11
Gainsborough	39,831	2,397	1,058,473	8,758	8,744	1,056	8.3	3 65	1.0	44
Grantham	19,093	1,834	1,270,480	8,659	9,114	1,092	6.8	4 72	.9	60
Grimsby, N.	15,685	1,205	833,425	7,101	7,417	2,314	8.5	5 89	2.8	1 92
Grimsby, S.	18,134	1,323	580,050	6,569	6,475	901	11.3	4 97	1.6	68
Louth	18,696	1,685	717,195	7,798	7,938	1,551	10.9	4 63	2.2	92
Niagara	22,344	1,762	931,655	11,498	9,005	2,822	12.3	6 53	3.0	1 60
Middlesex:										
Adelaide	44,218	2,047	869,749	11,715	11,737	2,668	13.5	5 72	3.1	1 30
Biddulph	39,285	2,350	1,218,815	10,404	10,790	4,293	8.5	4 43	3.5	1 83
Caradoc	61,975	3,924	1,200,356	18,655	18,582	4,890	15.5	4 75	4.1	1 25
Delaware	23,455	1,528	588,625	7,120	7,785	1,526	12.1	4 66	2.6	1 00
Dorchester, N.	51,616	3,515	1,701,305	16,778	17,454	6,604	9.9	4 77	3.9	1 88
Ekfrid	53,428	2,646	2,012,300	16,583	15,208	3,398	8.2	6 27	1.7	1 28
Lobo	47,284	2,686	1,753,130	15,049	15,098	3,815	8.6	5 60	2.2	1 42
London	99,833	8,512	4,149,410	41,549	42,045	21,823	10.0	4 88	5.3	2 56
McGillivray	66,772	3,096	2,006,275	15,199	15,369	6,232	7.6	4 91	3.1	2 01
Metcalfe	36,192	1,517	1,001,820	10,771	7,330	1,790	10.8	7 10	1.8	1 18
Mosa	47,214	2,534	580,589	11,942	12,228	2,087	20.6	4 71	3.6	82
Nissouri, W.	49,500	2,700	1,460,950	14,920	15,650	2,452	10.2	5 53	1.7	91
Westminster	63,097	4,179	2,982,430	19,957	21,831	6,324	6.7	4 78	2.1	1 51
Williams, E.	38,603	1,464	1,230,810	10,402	10,588	2,000	8.5	7 11	1.6	1 37
Williams, W.	35,176	1,516	893,640	8,528	8,939	2,647	9.5	5 63	3.0	1 75
Norfolk:										
Charlotteville	62,608	3,289	934,567	13,272	16,718	2,457	14.2	4 04	2.6	75
Houghton	33,550	2,031	459,175	6,458	6,593	824	14.1	3 18	1.8	41
Middleton	45,334	2,689	757,553	9,843	9,542	1,849	13.0	3 66	2.4	68
Townsend	64,954	3,675	2,374,500	17,416	16,537	1,586	7.3	4 74	.7	43
Walsingham, N.	40,244	2,240	555,920	8,954	8,979	2,429	16.1	4 00	4.4	1 08
Walsingham, S.	53,920	1,724	692,523	9,935	10,327	1,175	14.3	5 76	1.7	68
Windham	66,719	3,786	1,569,465	14,197	13,209	1,174	9.0	3 75	.7	31
Woodhouse	34,500	1,869	1,113,584	9,366	9,449	1,184	8.4	5 01	1.1	63

Northumberland:										
Alnwick	16,603	1,031	327,850	3,202	3,340	736	9.8	3 11	2.2	71
Brighton	48,849	2,569	1,178,970	8,904	8,924	1,781	7.6	3 47	1.5	69
Cramahe	46,568	2,437	1,092,360	9,111	10,803	1,493	8.3	3 74	1.4	61
Haldimand	76,390	3,895	1,726,370	14,979	19,163	2,965	8.7	3 85	1.7	76
Hamilton	62,115	3,952	1,927,830	13,275	14,856	2,623	6.9	3 36	1.4	66
Monaghan, S.	18,358	850	536,585	3,654	3,526	605	6.8	4 30	1.1	71
Murray	48,479	2,708	1,183,875	9,304	9,202	1,150	7.9	3 44	1.0	42
Percy	51,488	2,998	969,900	11,212	11,498	2,643	11.6	3 74	2.7	88
Seymour	66,920	2,945	1,125,175	12,870	12,511	4,476	11.4	4 37	4.0	1 52
Ontario:										
Brock	66,380	3,528	2,017,045	14,917	15,687	2,554	7.4	4 23	1.3	72
Mara	61,472	2,836	951,060	10,476	10,696	3,243	11.0	3 69	3.4	1 14
Pickering	71,375	5,338	3,383,604	25,814	26,531	7,983	7.6	4 84	2.4	1 50
Rama	33,708	1,189	148,875	3,393	3,326	810	22.8	2 85	5.4	68
Reach	63,518	3,481	1,973,924	12,851	13,766	2,026	6.5	3 69	1.0	58
Scott	49,237	2,185	1,026,560	9,339	9,375	1,131	9.1	4 27	1.1	52
Scugog	9,244	473	287,600	1,880	1,919	169	6.5	3 97	.6	36
Thorah	32,059	1,316	536,218	4,998	5,404	1,328	9.3	3 80	2.5	1 01
Uxbridge	51,719	2,727	993,895	10,593	10,950	1,551	10.7	3 88	1.6	56
Whitby, E.	31,175	2,526	1,626,235	10,165	10,133	2,476	6.3	4 02	1.5	98
Whitby	30,735	2,064	1,494,045	11,363	11,649	2,863	7.6	5 51	1.9	1 38
Oxford:										
Blandford	29,675	1,542	1,081,285	7,676	7,699	1,627	7.1	4 98	1.5	1 05
Blenheim	66,907	4,269	2,293,350	20,464	20,529	4,774	8.9	4 79	2.1	1 11
Dereham	65,068	3,711	2,411,230	25,105	25,139	4,726	10.4	6 77	1.9	1 27
Nissouri, E.	46,426	2,388	2,126,125	12,276	12,183	3,950	5.8	5 14	1.9	1 65
Norwich, N.	33,864	2,207	1,515,350	12,001	13,077	3,333	7.9	5 44	2.2	1 51
Norwich, S.	35,661	2,317	1,003,976	9,879	9,889	3,749	9.8	4 26	3.7	1 61
Oxford, E.	34,548	1,883	1,480,605	9,431	7,892	2,321	6.4	5 01	1.6	1 23
Oxford, N.	21,130	1,242	877,222	7,106	8,517	1,418	8.1	5 72	1.6	1 14
Oxford, W.	25,882	2,046	1,099,090	8,666	9,291	1,275	7.9	4 24	1.2	62
Zorra, E.	57,553	3,867	2,725,460	22,282	22,768	9,413	8.2	5 76	3.5	2 43
Zorra, W.	55,013	2,125	2,562,720	12,259	16,810	2,601	6.0	7 18	1.0	1 22
Peel:										
Albion	55,855	2,751	1,102,500	11,837	11,895	2,093	10.7	4 30	1.9	76
Caledon	68,607	3,739	1,772,835	14,526	14,466	2,959	8.2	3 88	1.7	79
Chinguacousy	80,132	3,888	2,921,300	18,010	17,676	2,342	6.2	4 63	.8	60
Toronto	64,393	5,087	2,718,045	19,779	18,164	4,170	7.3	3 89	1.5	81
Toronto Gore	19,000	970	734,010	5,418	5,446	1,641	7.4	5 59	2.2	1 69
Perth:										
Blanshard	45,911	2,563	2,099,350	13,644	14,071	4,268	6.5	5 32	2.0	1 66
Downie	48,571	2,716	2,057,150	13,341	12,795	2,806	6.5	4 91	1.4	1 03
Easthope, N.	43,105	2,194	1,932,420	11,770	11,942	2,325	6.1	5 36	1.1	1 05
Easthope, S.	23,816	1,917	1,144,415	8,525	8,530	3,215	7.4	4 45	2.9	1 67

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1900—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1900	Total values assessed, 1900	Total municipal and school taxes 1900		Total expenditure on roads and bridges, 1900	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Ellice	54,511	3,027	1,626,724	20,602	20,620	4,151	12.7	6 81	2.6	1 37
Elma	67,291	3,357	1,611,665	21,665	22,055	8,159	13.4	6 45	5.1	2 43
Fullarton	40,289	2,219	1,897,675	12,709	12,825	6,328	6.7	5 73	3.3	2 85
Hibbert	41,432	2,117	1,606,975	11,198	11,471	2,987	7.0	5 29	1.9	1 41
Logan	53,774	2,961	1,898,145	17,031	17,220	5,231	9.0	5 75	2.8	1 76
Morningtown	50,055	2,913	1,735,775	16,763	16,789	3,644	9.7	5 75	2.1	1 25
Wallace	49,873	2,779	1,953,661	14,101	13,825	2,009	7.2	5 07	1.0	72
Peterborough:										
Asphodel	37,780	1,762	843,970	7,789	7,927	1,291	9.2	4 42	1.5	73
Belmont & Methuen	80,932	1,988	197,421	5,372	5,467	1,036	27.2	2 70	5.2	52
Burleigh & Anstruther	30,761	616	88,364	2,428	1,662	24	27.5	3 94	.3	03
Chandos	42,166	741	55,434	2,171	1,850	67	39.2	2 93	1.2	09
Douro	38,653	2,007	770,600	7,133	7,248	1,272	9.3	3 55	1.7	63
Dummer	68,773	2,056	617,075	6,389	6,450	826	10.4	3 11	1.3	40
Ennismore	17,379	708	358,080	2,664	1,805	110	7.4	3 76	1.3	15
Galway & Cavendish	48,942	1,100	49,635	1,368	1,375	1	27.6	1 23	.0	00
Harvey	69,044	1,063	175,133	3,230	3,508	225	18.4	3 04	1.3	21
Monaghan, N.	13,950	903	603,350	4,729	4,795	1,310	7.8	5 24	2.2	1 45
Otonabee	64,669	3,278	1,979,786	14,719	14,338	3,363	7.4	4 49	1.7	1 02
Smith	57,738	2,565	1,449,710	11,668	12,635	2,211	8.0	4 55	1.5	86
Prescott:										
Alfred	43,976	3,034	327,275	7,477	7,573	600	22.8	2 46	1.8	19
Caledonia	45,269	1,759	283,579	7,174	7,590	352	25.3	4 08	1.2	20
Hawkesbury, E.	56,433	4,846	450,295	10,907	11,148	1,009	24.2	2 25	2.2	21
Hawkesbury, W.	28,767	1,338	264,107	5,634	5,607	302	21.3	4 21	1.1	22
Longueuil	17,494	941	170,675	2,656	2,373	151	15.6	2 82	.9	16
Plantagenet, N.	50,521	3,774	406,650	10,160	10,438	1,666	25.0	2 69	4.1	44
Plantagenet, S.	48,769	3,312	391,566	8,979	10,685	1,682	22.9	2 71	4.3	50
Prince Edward:										
Ameliasburg	43,282	2,995	1,129,710	11,470	12,510	1,710	10.2	3 83	1.5	57
Athol	23,042	1,093	477,215	3,677	3,739	148	7.7	3 36	.3	13
Hallowell	43,864	2,846	1,123,950	9,595	9,792	1,440	8.5	3 37	1.3	51
Hillier	32,248	1,537	737,005	6,486	6,543	328	8.8	4 22	.4	21
Marysburg, N.	23,571	1,182	473,525	4,097	4,112	147	8.7	3 47	.3	12

Marysburg, S.	23,280	1,187	354,640	3,721	3,818	378	10.5	3 14	1.1	31
Sophiasburg	43,318	1,854	989,634	7,202	7,089	517	7.3	3 90	.5	27
Renfrew:										
Admaston	70,263	2,215	742,835	5,364	6,453	649	7.2	2 42	.9	29
Algona, S.	31,012	930	38,945	1,271	1,626	35	32.6	1 37	.9	03
Alice & Fraser	60,961	1,940	118,825	3,573	3,231	141	30.1	1 84	1.1	07
Bagot & Blithfield	58,664	1,397	152,793	3,184	3,458	326	20.8	2 28	2.1	23
Bromley	50,439	2,001	168,140	4,816	5,351	300	28.6	2 41	1.7	14
Brougham	19,072	578	31,675	806	952	136	25.4	1 39	4.3	23
Brudenell & Lyndoch	50,773	1,339	70,825	2,115	3,086	137	29.9	1 58	1.6	1 02
Grattan	60,285	1,886	210,060	3,562	3,838	271	17.0	1 89	1.3	14
Griffith & Matawatchan	23,440	700	21,150	1,025	1,176	146	48.5	1 46	6.9	2 08
Hagarty & Jones	76,044	2,750	75,000	4,000	4,944	329	53.3	1 45	4.4	1 19
Head, Clara & Maria	14,538	359	35,075	1,299	1,278	44	37.0	3 62	1.3	12
Horton	38,057	1,431	497,581	3,926	4,544	411	7.9	2 74	.8	28
McNab	62,616	3,383	1,124,970	8,654	9,130	1,953	7.7	2 56	1.7	57
Pembroke	8,359	719	182,723	1,464	2,001	87	8.0	2 04	.5	12
Petewawa & McKay	28,572	947	43,999	1,778	1,510	135	40.4	1 88	3.7	14
Radcliffe & Raglan	40,171	945	78,335	2,233	2,183	221	28.5	2 36	2.8	23
Rolph, Buchanan & Wylie	40,625	1,036	57,141	2,040	1,877	43	35.7	1 97	.8	04
Ross	52,146	2,801	632,600	6,050	6,890	721	9.6	2 16	1.1	22
Sebastopol	30,052	729	54,491	1,137	1,354	112	20.9	1 56	2.1	15
Stafford	21,318	1,073	75,435	2,605	3,037	140	34.5	2 43	1.9	13
Westmeath	70,443	3,419	293,777	9,436	9,154	925	32.1	2 76	3.1	27
Wilberforce & Algona, N.	68,537	2,159	134,350	4,012	3,163	562	29.9	1 86	4.2	26
Russell:										
Cambridge	59,615	2,992	424,473	10,163	9,050	2,093	23.9	3 40	4.9	69
Clarence	69,370	4,820	363,504	12,184	12,613	1,649	33.5	2 53	4.5	34
Cumberland	74,696	3,597	429,994	12,966	12,453	1,261	30.2	3 60	2.9	35
Russell	47,175	3,104	663,306	11,742	11,109	2,638	17.7	3 78	3.9	85
Simcoe:										
Adjala	45,915	2,108	853,240	8,281	9,681	1,748	9.7	3 93	2.0	84
Essa	67,532	4,260	1,289,494	12,533	12,001	1,861	9.7	2 94	1.4	43
Flos	62,694	3,355	980,603	16,272	23,845	2,001	16.6	4 85	2.0	59
Gwillimbury, W.	46,860	2,330	1,045,184	10,108	10,292	761	9.7	4 34	4.7	32
Innisfil	67,964	3,547	1,366,174	13,439	14,174	2,559	9.8	3 79	1.8	72
Matchedash	19,672	456	54,680	1,002	582	233	18.3	2 20	4.3	51
Medonte	65,568	3,954	561,028	11,462	11,756	2,270	20.4	2 90	4.0	57
Nottawasaga	90,048	5,399	2,073,855	19,318	22,704	4,818	9.3	3 58	2.3	89
Orillia	72,701	3,468	580,181	11,927	12,078	3,784	20.6	3 47	6.5	1 09
Oro	73,227	3,893	1,062,675	10,539	11,727	1,218	9.9	2 71	1.1	31
Sunnidale	54,945	2,217	836,584	7,841	8,018	2,029	9.4	3 54	2.4	91
Tay	45,529	4,215	574,533	10,275	9,965	1,623	17.9	2 44	2.8	38
Tecumseth	65,965	3,221	1,683,785	15,720	17,876	5,770	9.3	4 88	3.4	1 79
Tiny	78,048	3,748	973,223	11,748	14,326	1,878	12.1	3 13	1.9	50

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1900—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1900	Total values assessed, 1900	Total municipal and school taxes 1900		Total expenditure on roads and bridges, 1900	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Tossorontio	44,597	1,615	738,823	6,115	5,992	725	8.3	3 79	.9	44
Vespra	62,060	2,996	489,240	9,829	10,846	1,382	20.1	3 28	2.9	46
Stormont:										
Cornwall	64,039	5,674	1,057,398	15,117	15,645	2,870	14.3	2 66	2.7	50
Finch	51,222	3,008	666,900	13,410	13,423	3,948	20.1	4 46	5.9	1 31
Osnabruck	62,042	4,721	1,192,980	15,933	15,278	2,789	13.4	3 37	2.3	59
Roxborough	71,515	4,197	769,870	16,901	17,222	2,059	22.0	4 03	2.7	49
Victoria:										
Bexley	28,236	864	125,424	3,438	3,984	327	27.4	3 98	2.5	37
Carden	44,564	705	62,498	1,998	2,248	405	32.0	2 83	6.5	57
Dalton	29,032	488	37,048	1,134	1,179	257	30.6	2 32	6.9	52
Eldon	61,984	2,913	765,030	11,033	12,598	1,993	14.4	3 79	2.6	68
Emily	59,984	2,051	951,743	10,150	10,087	5,563	10.7	4 95	5.8	2 71
Fenelon	51,559	2,282	744,110	8,685	8,748	1,475	11.7	3 81	1.9	64
Laxton, Digby & Longford	72,806	761	74,329	2,293	2,778	337	30.8	3 01	4.5	44
Mariposa	74,843	3,910	2,590,110	19,693	19,612	3,474	7.6	5 04	1.3	88
Ops	56,385	2,171	1,560,450	14,120	14,781	3,794	9.0	6 50	2.4	1 74
Somerville	62,887	1,843	202,545	5,815	5,675	605	28.7	3 16	2.9	32
Verulam	55,510	1,794	521,565	7,979	7,717	1,695	15.3	4 45	3.3	94
Waterloo:										
Dumfries, N.	44,315	2,059	1,871,170	9,675	10,335	1,146	5.2	4 70	.6	55
Waterloo	82,175	7,016	3,609,550	29,546	29,570	5,083	8.2	4 21	1.4	72
Wellesley	66,059	4,908	2,148,330	21,583	19,394	3,644	10.0	4 40	1.7	74
Wilmot	60,809	5,126	2,593,350	19,868	19,868	3,094	7.7	3 88	1.2	60
Woolwich	53,539	4,336	2,561,695	19,362	19,411	3,202	7.6	4 47	1.2	73
Welland:										
Bertie	34,156	3,040	1,666,345	13,448	13,097	2,479	8.1	4 42	1.5	81
Crowland	19,217	967	388,067	4,953	4,819	652	12.8	5 12	1.7	67
Humberstone	31,061	2,948	876,625	8,867	8,483	1,102	10.1	3 01	1.3	37
Pelham	28,927	2,333	1,008,415	9,311	9,423	2,725	9.2	3 99	2.7	1 16
Stamford	21,241	1,958	805,956	9,995	10,688	1,090	12.4	5 10	1.4	55
Thorold	22,851	1,679	632,116	6,661	6,486	814	10.5	3 97	1.3	48
Wainfleet	51,000	2,675	873,200	10,729	10,817	1,063	12.3	4 01	1.2	39
Willoughby	18,798	931	416,700	3,952	3,976	441	9.5	4 24	1.1	47

Wellington:										
Arthur	64,438	2,802	1,419,250	12,179	12,186	1,788	8.6	4 35	1.3	63
Eramosa	44,064	2,647	1,856,705	10,682	10,241	1,558	5.8	4 04	.8	58
Erin	70,498	3,196	2,020,900	13,330	13,997	1,512	6.6	4 17	.7	47
Garafraxa, W.	47,615	2,311	1,609,100	11,176	10,761	1,925	6.9	4 84	1.2	83
Guelph	36,661	2,198	1,512,150	9,373	9,722	1,765	6.2	4 26	1.2	80
Luther, W.	49,644	2,095	849,225	9,400	10,539	1,009	11.1	4 49	1.2	48
Maryborough	56,455	2,964	1,731,000	14,728	14,852	2,983	8.5	4 97	1.7	1 01
Minto	69,403	2,974	1,848,315	13,641	12,135	2,730	7.4	4 59	1.5	91
Nichol	26,693	1,686	1,081,305	6,959	7,773	745	6.4	4 13	.7	44
Peel	74,244	3,854	1,899,410	17,637	17,629	2,005	9.3	4 58	1.1	52
Pilkington	29,122	1,396	1,043,306	7,750	8,356	1,269	7.4	5 55	1.2	90
Puslinch	58,506	3,321	1,440,645	11,023	10,778	1,377	7.7	3 32	.9	41
Wentworth:										
Ancaster	45,606	3,788	2,231,662	15,650	14,375	6,077	7.0	4 13	2.7	1 60
Barton	13,089	3,441	1,350,816	12,224	10,975	2,496	9.0	3 55	1.8	72
Beverley	70,196	3,941	1,997,526	14,136	13,627	2,389	7.1	3 59	1.2	60
Binbrook	26,423	1,380	972,750	5,961	6,076	773	6.1	4 32	.8	56
Flamboro, E.	33,739	2,358	1,708,638	8,643	8,424	1,615	5.1	3 67	.9	68
Flamboro, W.	31,088	2,759	1,278,350	9,885	10,880	1,401	7.7	3 58	1.1	51
Glanford	23,628	1,624	1,068,600	5,646	6,428	283	5.3	3 48	.3	17
Saltfleet	28,290	3,038	1,775,737	14,396	14,603	3,074	8.2	4 74	1.8	1 01
York:										
Etobicoke	29,092	3,603	1,838,085	20,956	22,217	5,472	11.4	5 82	2.2	1 50
Georgina	35,171	1,652	647,730	6,022	6,174	1,036	9.3	3 65	1.6	62
Gwillimbury, E.	58,436	3,083	1,271,790	12,583	11,830	2,205	9.9	4 08	1.7	71
Gwillimbury, N.	31,577	1,315	756,100	5,434	5,535	2,647	7.2	4 13	.8	49
King	87,656	5,100	2,817,925	21,819	19,661	4,692	7.7	4 28	1.7	92
Markham	66,634	5,302	3,209,070	22,237	22,173	4,370	6.9	4 19	1.4	82
Scarborough	42,875	3,711	2,087,757	16,840	17,342	4,914	8.1	4 54	2.4	1 32
Vaughan	67,192	4,342	2,913,595	22,008	21,442	5,131	7.6	5 07	1.8	1 18
Whitchurch	60,116	3,505	1,617,885	11,832	11,962	1,615	7.3	3 38	.9	46
York	58,000	8,600	5,722,710	81,527	108,457	20,277	14.2	9 48	3.5	2 35

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1905.

Township Municipality	Assessed area in acres (unstated)	Assessed population, 1905	Total values assessed, 1905	Total municipal and school taxes 1905		Total expenditure on roads and bridges, 1905	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
Brant:	Acres		$	$	$	$		$ c.		$ c.
Brantford		4,853	4,075,128	31,992	15,799	12,210	7.9	6 59	2.9	2 51
Burford		4,036	2,298,050	22,814	23,905	7,127	9.9	5 65	3.1	1 76
Dumfries, S.		2,370	2,511,436	16,918	16,943	5,635	6.7	7 14	2.2	2 37
Oakland		690	420,145	3,923	3,947	208	9.3	5 69	.4	30
Onondaga		1,004	760,414	6,606	6,931	952	8.7	6 58	1.2	94
Bruce:										
Albemarle		1,296	374,074	4,721	5,345	1,378	12.6	3 64	3.6	1 06
Amabel		3,490	832,000	12,661	12,365	1,744	15.2	3 63	2.0	43
Arran		2,139	1,482,175	12,942	13,864	6,500	8.7	6 05	4.3	3 03
Brant		3,401	2,026,050	15,364	15,799	5,762	7.6	4 52	2.8	1 69
Bruce		2,719	1,838,962	16,913	17,330	5,814	9.2	6 22	3.1	2 13
Carrick		4,832	2,805,630	17,904	18,038	2,036	6.4	4 14	6.4	42
Culross		2,365	1,757,800	12,038	12,258	2,234	6.8	5 09	1.2	93
Eastnor		1,632	615,715	9,243	9,927	1,299	15.0	5 66	2.1	79
Elderslie		1,800	2,106,975	12,728	12,728	2,821	6.0	7 07	1.3	1 56
Greenock		2,515	1,824,721	12,206	12,199	7,099	6.7	4 85	3.8	2 82
Huron		3,039	2,634,685	16,366	14,446	4,124	6.4	5 58	1.5	1 35
Kincardine		2,593	1,814,000	14,868	16,775	2,965	8.6	6 04	1.6	1 14
Kinloss		2,004	1,582,930	8,887	9,682	1,906	6.1	4 85	1.2	95
Lindsay		743	133,385	3,250	2,949	1,180	26.0	4 67	8.8	1 58
St. Edmunds		416	68,893	1,875	2,213	300	24.2	4 01	4.4	72
Saugeen		1,361	985,010	7,679	8,048	1,013	8.2	5 91	1.0	74
Carleton:										
Fitzroy		2,366	733,810	11,903	11,517	3,149	16.2	5 03	4.2	1 33
Gloucester		6,314	1,767,899	27,870	26,445	6,211	15.8	4 41	3.5	98
Goulburn		2,326	851,430	13,332	8,731	3,666	15.7	5 73	4.3	1 57
Gower N.		1,924	1,039,684	10,050	11,340	3,542	9.7	5 22	3.4	1 84
Huntley		2,007	1,291,695	10,821	10,803	3,141	8.4	5 39	2.4	1 56
March		1,053	499,603	4,684	4,783	1,075	9.4	4 45	2.1	1 02
Marlborough		1,400	623,625	7,360	7,985	567	11.8	5 26	.9	40
Nepean		5,294	2,807,476	27,679	25,401	10,264	9.9	5 23	3.6	1 93
Osgoode		4,189	1,546,040	26,772	24,944	4,421	17.3	6 39	2.8	1 07
Torbolton		931	137,975	4,076	3,293	703	29.7	4 38	5.1	75

Dufferin:										
Amaranth		2,364	1,809,714	12,858	15,649	1,926	7.1	5 44	1.1	81
Garafraxa E.		1,760	1,139,662	10,201	10,201	2,329	9.0	5 80	2.0	1 32
Luther E.		1,549	1,181,998	11,036	11,712	2,453	9.3	7 12	2.0	1 58
Melancthon		3,263	1,964,542	14,724	14,367	2,432	7.5	4 51	1.2	74
Mono		2,800	1,554,810	14,369	14,392	3,821	9.2	5 13	2.4	1 36
Mulmur		2,784	1,466,825	13,895	14,884	3,988	9.5	4 99	2.7	1 43
Dundas:										
Matilda		3,171	1,354,055	20,971	26,160	3,203	15.5	6 61	2.3	1 01
Mountain		2,794	1,331,109	24,607	16,128	7,732	18.5	8 81	5.8	2 76
Williamsburg		3,494	1,490,920	20,117	20,489	4,731	13.5	5 76	3.1	1 35
Winchester		3,357	1,435,640	30,562	28,077	8,868	21.3	9 10	6.1	2 64
Durham:										
Cartwright		1,660	886,338	9,240	10,292	1,744	10.4	5 56	1.9	1 05
Cavan		2,246	1,557,305	16,481	16,043	4,379	10.6	7 34	2.7	1 50
Clarke		3,280	2,149,060	18,197	17,659	3,232	8.5	5 55	1.5	98
Darlington		3,759	2,374,361	21,358	21,703	4,536	9.0	5 68	1.9	1 20
Hope		2,959	2,208,386	14,673	14,232	1,995	6.6	4 96	.9	67
Manvers		2,782	891,895	14,506	14,441	2,581	16.3	5 23	2.9	93
Elgin:										
Aldborough		4,413	2,057,658	33,847	31,859	11,558	16.4	7 67	5.6	2 61
Bayham		3,502	1,121,577	22,533	22,707	6,007	20.1	6 43	5.4	1 71
Dorchester S.		1,555	1,757,415	14,115	13,870	4,301	8.0	9 08	2.5	2 76
Dunwich		3,137	2,509,266	22,966	23,384	6,766	9.2	7 32	2.7	2 16
Malahide		3,360	2,600,973	25,833	25,710	5,531	9.9	7 69	2.1	1 64
Southwold		3,395	3,177,856	25,454	25,091	7,655	8.0	7 50	2.4	2 25
Yarmouth		4,537	3,514,543	36,150	35,614	11,320	10.3	7 97	3.2	2 50
Essex:										
Anderdon		1,908	690,848	11,654	12,289	1,600	16.9	6 08	2.3	84
Colchester N.		1,882	743,695	17,590	15,737	3,176	23.7	9 35	4.3	1 68
Colchester S.		2,890	1,058,274	23,044	19,751	3,711	21.8	7 97	3.5	1 28
Gosfield N.		1,876	763,285	16,848	16,202	1,342	22.1	8 98	1.8	7 16
Gosfield S.		2,080	1,301,360	18,201	18,021	3,766	14.0	8 75	2.8	1 81
Maidstone		2,767	1,544,227	21,712	20,518	3,309	14.1	7 85	2.1	1 19
Malden		1,399	898,488	9,048	9,470	2,975	10.1	6 47	3.3	2 13
Mersea		4,009	1,894,048	32,876	35,001	6,415	17.4	8 20	3.4	1 60
Rochester		2,434	1,582,475	15,899	17,688	3,200	10.0	6 53	2.0	1 32
Sandwich E.		2,762	754,742	14,912	14,576	1,922	19.8	5 40	2.5	69
Sandwich S.		1,595	825,827	11,283	12,301	1,829	13.7	7 07	2.2	1 14
Sandwich W.		2,467	776,576	11,714	11,343	2,934	15.1	4 75	3.8	1 18
Tilbury N.		2,052	690,936	14,731	14,534	1,391	21.3	7 18	2.0	68
Tilbury W.		1,836	706,574	15,385	15,993	2,067	21.8	8 38	2.9	1 13
(Pelee Island		642	320,280	9,390	10,367	887	29.3	14 63	2.7	1 38)

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1905—Continued.

Township Municipality	Assessed area in acres (unstated)	Assessed population, 1905	Total values assessed, 1905	Total municipal and school taxes 1905		Total expenditure on roads and bridges	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
Frontenac:	Acres		$	$	$	$		$ c.		$ c.
Barrie		472	77,185	1,553	1,321	45	20.1	3 29	.6	0 96
Bedford		1,125	327,621	6,109	7,757	381	18.6	5 43	1.2	34
Clarendon		961	85,611	2,163	2,136	115	25.3	2 25	1.3	1 20
Hinchinbrooke		1,100	218,979	5,769	5,681	658	26.3	5 24	3.0	59
Howe Island		317	77,942	1,508	1,695	40	19.3	4 76	.5	13
Kennebec		1,155	107,941	3,635	3,403	192	33.7	3 15	1.7	16
Kingston		2,601	1,165,564	17,085	14,900	1,760	10.6	6 57	1.5	68
Loughborough		1,731	410,760	8,590	8,639	1,250	20.9	4 96	3.0	72
Olden		1,041	108,776	4,600	5,262	542	42.3	4 42	5.0	52
Oso		1,156	117,755	3,497	3,266	236	29.7	3 03	2.0	20
Palmerston		968	93,526	2,933	2,867	222	31.4	3 03	2.4	23
Pittsburg		2,314	817,255	15,230	16,282	3,462	18.6	6 58	4.2	1 50
Portland		1,907	467,960	10,699	9,927	1,674	22.9	5 61	3.6	88
Storrington		1,766	422,947	9,460	9,410	887	22.4	5 36	2.1	50
Wolfe Island		1,488	583,368	11,376	10,431	1,514	19.5	7 65	2.6	1 02
Glengarry:										
Charlottenburg		4,768	1,181,104	26,512	24,680	11,246	22.4	5 56	9.5	2 36
Kenyon		3,856	1,476,751	16,272	15,730	3,402	11.0	4 22	2.1	79
Lancaster		3,730	2,420,569	13,295	14,327	1,484	5.5	3 56	.6	40
Lochiel		4,630	1,327,840	16,048	15,179	1,390	12.1	3 47	1.1	3 01
Grenville:										
Augusta		3,600	1,318,635	16,965	18,666	3,234	12.9	4 71	2.5	90
Edwardsburg		3,299	1,203,752	14,457	13,497	1,162	12.0	4 58	.9	35
Gower S.		723	317,655	3,322	5,855	296	10.5	4 59	.9	41
Oxford-on-Rideau		2,535	812,156	12,028	13,141	1,452	14.8	4 74	1.8	57
Wolford		1,552	940,100	7,601	8,915	991	8.1	4 90	1.1	64
Grey:										
Artemesia		3,168	1,076,595	17,173	17,226	3,931	16.0	5 42	3.7	1 24
Bentinck		3,135	1,806,445	13,524	12,625	4,197	7.5	4 31	2.3	1 34
Collingwood		3,363	1,404,870	17,277	17,208	3,400	12.3	5 14	2.4	1 01
Derby		1,833	976,397	10,292	10,281	3,643	10.5	5 61	3.7	1 99
Egremont		2,983	2,092,393	14,211	14,258	2,964	6.8	4 76	1.4	99
Euphrasia		2,789	1,267,605	14,699	15,268	2,410	11.6	5 27	1.9	87

Glenelg	2,325	763,050	10,059	10,223	2,748	13.2	4 33	3.6	1 18
Holland	2,439	1,354,048	11,739	8,546	1,998	8.7	4 81	1.5	82
Keppel	3,529	757,180	14,434	23,114	3,900	19.0	4 09	5.2	1 10
Normanby	4,109	2,190,455	18,053	18,066	2,753	8.2	4 39	1.3	67
Osprey	2,931	1,052,300	13,447	13,484	2,476	12.8	4 59	2.3	84
Proton	3,484	1,372,450	15,941	15,682	3,213	11.6	4 58	2.3	92
St. Vincent	2,598	1,386,565	16,482	16,565	3,973	11.9	6 34	2.9	1 53
Sarawak	1,446	348,946	7,489	7,698	3,612	21.5	5 18	1.0	2 50
Sullivan	2,843	1,149,725	14,189	13,984	2,440	12.3	4 99	2.1	86
Sydenham	3,221	1,906,887	16,820	17,198	4,777	8.8	5 22	2.5	1 48
Haldimand:									
Canborough	870	520,185	4,850	4,618	444	9.3	5 57	.9	51
Cayuga N.	1,527	919,005	7,349	7,502	546	8.0	4 81	.6	36
Cayuga S.	712	393,765	3,079	3,127	146	7.8	4 32	.4	21
Dunn	796	434,340	3,799	3,792	188	8.7	4 77	.4	24
Moulton	1,710	647,242	6,880	6,319	473	10.6	4 02	.7	28
Oneida	1,279	1,007,000	7,923	7,917	489	7.9	6 19	.5	38
Rainham	1,742	785,315	7,073	7,078	1,969	9.0	4 06	2.5	1 13
Seneca	1,635	1,183,125	10,033	9,975	2,748	8.5	6 14	2.3	1 68
Sherbrooke	322	166,601	1,383	1,307	59	8.3	4 30	.4	18
Walpole	3,756	1,970,420	23,072	22,990	3,486	11.7	6 14	1.7	93
Haliburton:									
Anson and Hindon	253	34,970	1,038	1,157	44	29.7	4 10	1.3	18
Cardiff	534	67,896	2,072	1,518	83	30.5	3 88	1.2	16
Dysart and northwards	1,054	392,040	5,698	5,275	1,531	14.5	5 41	3.9	1 33
Glamorgan	521	30,074	1,455	1,221	198	48.4	2 79	6.6	38
Lutterworth	409	36,875	1,373	1,662	116	27.2	3 27	3.1	28
Minden	1,148	90,951	3,340	3,537	529	36.7	2 91	5.8	46
Monmouth	591	56,316	2,614	1,722	58	46.8	4 42	1.0	98
Sherbourne and Northumberland	221	48,407	1,218	1,434	200	25.2	5 51	4.1	91
Snowdon	735	73,753	2,649	2,398	226	35.9	3 60	3.1	31
Stanhope	469	50,745	1,118	1,043	76	22.0	2 38	1.5	16
Halton:									
Esquesing	3,347	2,211,576	16,752	17,515	7,209	7.6	5 00	3.3	2 15
Nassagaweya	2,080	1,500,695	8,024	7,570	2,104	5.3	3 86	1.4	1 01
Nelson	2,529	2,403,897	15,217	14,920	4,052	6.3	6 02	1.7	1 60
Trafalgar	3,139	2,605,564	16,347	16,695	6,292	6.3	5 21	2.4	20
Hastings:									
Bangor W. and McClure	1,023	67,175	2,751	2,275	369	41.0	2 69	5.5	36
Carlow	670	60,073	2,603	2,239	873	43.3	3 89	14.5	1 30
Dungannon	785	86,568	2,528	2,496	373	29.2	3 22	4.3	48
Elzevir and Grimsthorpe	1,344	318,975	4,299	3,866	477	13.5	3 20	1.5	35
Faraday	767	76,288	2,893	4,232	552	37.9	3 77	7.3	72
Hungerford	3,437	1,605,384	12,003	14,355	1,075	7.5	3 49	.7	3 11
Huntingdon	2,105	473,957	8,816	8,354	432	18.6	4 19	.9	21

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1905—Continued.

Township Municipality	Assessed area in acres (unstated)	Assessed population, 1905	Total values assessed, 1905	Total municipal and school taxes 1905		Total expenditure on roads and bridges	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres			$	$	$		$ c.		$ c.
Limerick	.....	522	60,215	1,708	1,863	385	28.4	3 27	6.4	74
Madoc	.....	2,674	1,119,470	14,508	14,837	432	13.0	5 43	.4	16
Marmora and Lake	.....	1,636	250,168	7,013	8,676	619	28.0	4 29	2.5	38
Mayo	.....	543	35,135	1,683	1,655	265	47.9	3 10	7.5	49
Monteagle and Herschel	.....	1,681	108,883	3,888	3,203	409	35.7	2 31	3.8	24
Rawdon	.....	3,119	1,171,035	15,742	16,392	917	13.4	5 09	.8	29
Sidney	.....	3,798	2,091,332	22,751	23,012	3,879	10.9	5 99	1.9	1 02
Thurlow	.....	3,450	2,119,650	19,056	18,626	1,252	9.0	5 52	.5	36
Tudor and Cashel	.....	836	108,038	2,755	2,721	667	25.5	3 30	6.1	79
Tyendinga	.....	3,307	1,399,013	16,171	15,904	966	11.6	4 89	.7	23
Wollaston	.....	839	177,191	3,097	2,717	597	17.5	3 69	3.4	71
Huron:										
Ashfield	.....	2,916	1,697,218	15,967	15,063	3,271	9.4	5 48	1.9	1 12
Colborne	.....	1,679	1,401,325	9,193	9,238	1,586	6.6	5 48	1.1	95
Goderich	.....	2,175	1,471,105	14,411	14,379	2,707	9.8	6 63	1.8	1 25
Gray	.....	3,040	2,844,200	22,250	23,421	16,105	7.8	7 32	5.7	5 30
Hay	.....	3,295	2,325,800	18,121	18,729	3,538	7.8	5 50	1.5	1 07
Howick	.....	3,668	2,868 437	22,305	21,895	7,760	7.8	6 08	2.7	2 18
Hullett	.....	2,654	1,913,535	19,245	19,293	6,343	10.1	7 25	3.3	2 39
McKillop	.....	2,388	2,233,190	19,380	19,664	4,351	8.7	8 12	1.9	1 82
Morris	.....	2,296	1,937,345	14,359	13,975	5,263	7.4	6 25	2.7	2 30
Stanley	.....	1,952	1,997,989	14,601	14,823	4,165	7.3	7 48	2.1	2 14
Stephen	.....	3,755	2,757,938	17,032	16,403	3,487	6.2	4 54	1.3	93
Tuckersmith	.....	2,073	2,007,654	15,936	16,004	7,180	7.9	7 69	3.6	3 46
Turnberry	.....	2,028	1,329,085	9,441	9,466	2,670	7.1	4 66	2.0	1 31
Usborne	.....	2,120	1,866,632	21,970	23,183	6,126	11.8	10 36	3.3	2 88
Wawanosh E.	.....	1,755	1,468,900	9,589	9,534	1,330	6.5	5 46	.9	76
Wawanosh W.	.....	1,894	1,589,512	11,572	11,665	3,866	7.3	6 11	2.4	2 04
Kent:										
Camden	.....	2,414	1,750,792	18,761	18,992	1,533	10.7	7 77	.9	64
Chatham	.....	5,123	3,236,000	47,767	48,261	3,169	14.8	9 32	1.0	62
Dover	.....	4,213	2,281,907	27,747	26,056	2,369	12.2	6 59	1.0	56
Harwich	.....	4,323	3,861,911	35,547	35,547	7,138	9.2	8 22	1.8	1 65
Howard	.....	2,710	2,442,034	27,411	26,029	7,938	11.2	10 11	3.2	2 93
Orford	.....	2,532	1,741,469	19,986	19,928	3,290	11.5	7 89	1.9	1 30

Raleigh		4,245	2,773,040	43,494	38,456	4,503	15.7	10 25	1.6	1 05
Romney		1,728	817,685	17,380	18,891	3,183	21.3	10 06	3.9	1 84
Tilbury E.		2,887	1,681,065	39,213	31,754	9,083	23.3	13 58	5.4	3 14
Zone		1,064	686,805	8,305	10,446	1,845	12.1	7 81	2.6	1 73
Lambton:										
Bosanquet		2,606	2,177,543	17,876	17,323	4,159	8.2	6 86	1.9	1 59
Brooke		3,081	2,485,929	39,854	37,189	15,521	16.0	12 94	6.3	5 03
Dawn		3,232	1,374,795	29,549	24,868	1,423	21.5	9 14	1.0	44
Enniskillen		4,031	2,290,620	33,354	35,440	6,765	14.6	8 27	3.0	1 68
Euphemia		1,901	1,047,645	12,788	11,855	9,314	12.2	6 73	8.9	4 90
Moore		4,264	2,045,258	31,122	30,193	7,577	10.6	7 30	3.7	1 77
Plympton		3,252	2,513,887	26,378	27,316	5,686	10.5	8 11	2.2	1 75
Sarnia		1,892	1,220,924	16,271	17,411	2,453	13.3	8 60	2.0	1 29
Sombra		4,022	1,773,633	26,772	27,305	5,111	15.1	6 66	2.9	1 27
Warwick		2,889	2,295,100	20,651	16,618	5,499	9.0	7 15	2.4	1 90
Lanark:										
Bathurst		2,121	817,939	8,844	9,235	500	10.8	4 17	.6	24
Beckwith		1,535	505,893	6,932	7,610	1,217	13.7	4 52	2.4	79
Burgess N.		707	228,665	3,181	3,448	324	13.9	4 50	1.4	46
Dalhousie and Sherbrooke N.		1,519	495,752	5,497	5,193	798	11.1	3 62	1.6	53
Darling		693	117,511	2,017	2,087	109	17.2	2 91	.9	16
Drummond		1,899	929,868	9,750	9,818	907	10.5	5 13	.9	48
Elmsley N.		955	390,724	4,491	4,424	781	11.5	4 70	2.0	82
Lanark		1,660	856,485	6,355	6,685	640	7.4	3 83	.8	39
Lavant		490	77,326	1,981	1,841	69	25.6	4 04	.9	1 41
Montague		1,850	592,837	9,729	8,850	870	16.4	5 26	1.5	47
Pakenham		1,563	627,129	8,984	8,553	1,064	14.3	5 75	1.7	68
Ramsay		2,034	633,015	11,842	11,877	2,380	18.7	5 82	3.8	1 17
Sherbrooke S.		789	90,503	1,886	2,293	550	20.8	2 39	6.1	70
Leeds:										
Bastard and Burgess S.		2,475	1,841,295	12,187	12,525	3,270	6.6	4 92	1.8	1 32
Crosby N.		981	275,200	5,420	6,126	286	19.7	5 52	1.0	29
Crosby S.		1,446	735,440	7,157	7,127	2,593	9.7	4 95	3.5	1 79
Elizabethtown		3,787	1,424,040	19,201	17,678	3,822	13.5	5 07	2.7	1 01
Elmsley S.		705	455,682	3,952	4,401	775	8.7	5 61	1.7	1 10
Kitley		1,611	1,025,764	9,668	9,624	2,868	9.4	6 00	2.8	1 78
Leeds and Lansdowne F.		2,407	1,958,059	15,676	15,864	6,153	8.0	6 51	3.1	2 56
Leeds and Lansdowne R.		2,114	1,356,831	10,556	10,566	3,821	7.8	4 99	2.8	1 81
Yonge and Escott F.		2,331	955,212	14,883	14,073	3,155	15.6	6 38	3.3	1 35
Yonge and Escott R.		1,183	432,543	6,752	6,675	912	15.6	5 71	2.1	77
Lennox and Addington:										
Adolphustown		572	319,929	3,198	3,477	302	10.0	5 59	.9	53
Amherst Island		793	353,050	4,054	3,845	177	11.5	5 11	.5	22
Camden E.		4,114	1,739,245	21,170	25,100	4,529	12.2	5 15	2.6	1 13
Denbigh, Abinger and Ashby		980	68,451	2,046	2,416	134	29.9	2 09	2.0	14

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1905—Continued.

Township Municipality	Assessed area in acres (unstated)	Assessed population, 1905	Total values assessed, 1905	Total municipal and school taxes 1905		Total expenditure on roads and bridges, 1905	Mills on $	Total tax imposed per head	Mill rate for roads and brides expenditure	Roads and bridges expenditure per head
				Imposed	Received					
			$	$	$	$		$ c.		$ c.
Ernesttown	.....	2,982	1,499,747	14,825	14,542	3,219	9.9	4 97	2.1	1 08
Fredericksburg N.	.....	1,426	717,435	6,843	7,706	1,929	9.5	4 80	2.6	1 35
Fredericksburg S.	.....	967	729,024	6,021	5,863	834	8.3	6 23	1.1	86
Kaladar and Anglesea	.....	1,172	162,244	2,859	2,472	236	17.6	2 44	1.5	2 01
Richmond	.....	2,327	1,006,555	11,779	13,612	3,949	11.7	5 06	3.9	1 70
Sheffield	.....	1,929	763,004	8,549	8,797	1,156	11.2	4 43	1.5	60
Lincoln:										
Caistor	.....	1,586	691,709	7,032	6,744	1,305	10.2	4 43	1.9	82
Clinton	.....	1,794	1,464,945	13,857	14,591	3,545	9.5	7 72	2.4	1 98
Gainsborough	.....	2,298	1,273,519	9,691	9,970	2,462	7.6	4 22	1.9	1 07
Grantham	.....	1,961	1,254,700	9,657	9,798	923	7.7	4 92	.7	47
Grimsby N.	.....	1,302	875,095	8,869	10,199	1,404	10.1	6 81	1.6	1 08
Grimsby S.	.....	1,307	684,127	8,281	8,106	1,507	12.1	6 34	2.1	1 50
Louth	.....	1,759	790,472	11,898	12,718	4,949	15.1	6 76	6.3	2 81
Niagara	.....	1,732	926,469	10,848	11,561	2,934	11.7	6 26	3.2	1 69
Middlesex:										
Adelaide	.....	1,814	2,047,935	16,138	16,146	4,541	7.9	8 90	2.1	2 50
Biddulph	.....	2,070	1,892,628	12,537	12,621	4,547	6.6	6 06	2.4	2 19
Caradoc	.....	3,498	3,167,350	23,769	21,737	3,607	7.5	6 80	1.1	1 03
Delaware	.....	1,392	919,630	10,409	13,571	2,465	11.3	7 48	2.7	1 77
Dorchester N.	.....	3,439	2,514,276	22,566	21,652	7,642	9.0	6 56	3.0	2 22
Ekfrid	.....	2,407	2,234,346	19,576	19,107	4,095	8.8	8 13	1.8	1 70
Lobo	.....	2,475	1,837,602	18,504	18,314	5,356	10.1	7 48	2.9	2 17
London	.....	8,101	4,276,967	45,485	42,430	12,105	10.6	5 61	2.8	1 49
McGillivray	.....	2,638	2,628,540	18,972	19,033	5,619	7.2	7 19	2.1	2 13
Metcalfe	.....	1,416	1,359,552	16,581	14,146	3,511	12.2	11 71	2.6	2 48
Mosa	.....	1,859	1,599,110	15,821	15,541	2,515	9.9	8 51	1.6	1 35
Nissouri W.	.....	2,693	2,731,400	23,700	20,879	6,121	8.7	8 80	2.2	2 27
Westminster	.....	4,489	3,784,615	31,969	31,204	7,554	8.4	7 12	2.0	1 68
Williams E.	.....	1,325	1,327,885	13,017	13,387	3,511	9.8	9 82	2.6	2 65
Williams W.	.....	1,354	927,565	11,236	11,316	2,563	12.1	8 30	2.8	1 89
Norfolk:										
Charlotteville	.....	2,885	1,403,529	13,951	14,183	1,968	9.9	4 84	1.4	68
Houghton	.....	1,880	490,585	8,567	8,771	2,085	17.5	4 56	4.3	1 11

Middleton		2,369	984,202	11,630	12,965	1,998	11.8	4 91	2.0	84
Townsend		3,762	2,624,875	18,980	18,822	4,181	7.2	5 05	1.6	1 11
Walsingham N.		1,967	745,325	10,665	11,492	2,132	14.3	5 42	2.9	1 08
Walsingham S.		1,726	795,840	12,371	13,111	1,180	15.5	7 17	1.5	68
Windham		3,365	1,752,367	16,880	17,592	3,172	9.6	5 01	1.8	95
Woodhouse		1,832	1,612,310	10,709	10,974	2,734	6.6	5 85	1.7	1 49
Northumberland:										
Alnwick		921	451,960	3,964	4,092	468	8.8	4 30	1.0	51
Brighton		2,238	1,218,275	10,901	10,949	1,879	8.9	4 68	1.5	84
Cramahe		2,311	1,090,344	11,896	12,234	1,930	10.9	5 15	1.8	83
Haldimand		3,558	1,553,660	16,840	17,277	2,887	10.8	4 73	1.9	81
Hamilton		3,550	2,072,764	18,035	16,789	4,712	8.7	5 08	2.3	1 33
Monaghan S.		881	668,785	4,287	3,825	813	6.4	4 87	1.2	92
Murray		2,638	1,174,025	14,147	13,616	4,467	12.0	5 36	3.9	1 69
Percy		2,739	990,375	12,028	12,346	2,543	12.1	4 39	2.6	93
Seymour		2,866	1,123,033	16,240	16,129	4,750	14.5	5 67	4.2	1 65
Ontario:										
Brock		3,398	2,736,080	17,460	17,606	4,565	6.4	5 15	1.7	1 35
Mara		2,912	1,658,427	12,185	11,541	3,822	7.3	4 18	2.3	1 31
Pickering		4,921	3,349,644	30,360	29,794	9,962	9.1	6 17	3.0	2 02
Rama		1,269	250,211	5,505	3,921	905	22.0	4 34	3.6	71
Reach		3,236	1,982,391	18,939	18,843	5,809	9.6	5 85	2.9	1 80
Scott		2,101	1,351,663	11,160	11,166	3,113	8.3	5 31	2.3	1 48
Scugog		443	281,810	2,327	2,287	310	8.3	5 25	1.1	70
Thorah		1,366	1,172,849	7,405	7,378	2,473	6.3	5 42	2.1	1 81
Uxbridge		2,479	999,685	11,887	12,050	1,633	11.9	4 80	1.6	66
Whitby E.		2,566	1,651,160	13,336	13,403	3,348	8.1	5 20	2.0	1 30
Whitby		1,751	1,511,986	12,527	12,624	4,020	8.3	7 15	2.7	2 30
Oxford:										
Blandford		1,531	1,189,466	9,110	9,023	3,096	7.7	5 95	2.6	2 02
Blenheim		4,184	3,120,054	25,419	24,346	7,391	7.8	5 84	2.4	1 76
Dereham		3,394	3,192,847	29,246	29,191	9,564	9.2	8 62	3.0	2 82
Nissouri E.		2,508	2,800,968	17,861	17,899	7,266	6.4	7 12	2.6	2 90
Norwich N.		2,183	1,659,290	15,985	16,128	6,658	9.6	7 32	4.0	3 05
Norwich S.		1,912	1,138,467	12,928	12,999	6,417	11.4	6 76	5.6	3 35
Oxford E.		2,036	1,517,027	13,566	13,200	4,661	8.9	6 66	3.1	2 29
Oxford N.		1,195	932,609	8,085	8,157	2,141	8.7	6 77	2.3	1 79
Oxford W.		2,022	1,410,027	11,987	12,031	4,078	8.5	5 93	2.9	2 02
Zorra E.		3,729	4,060,080	28,558	28,595	12,693	7.0	7 66	3.1	3 40
Zorra W.		2,220	2,901,017	19,227	19,185	7,911	6.6	8 66	2.7	3 56
Peel:										
Albion		2,224	1,752,155	14,571	14,565	3,965	8.3	6 55	2.3	1 78
Caledon		3,667	1,809,850	18,245	18,324	5,880	10.1	4 98	3.3	1 60
Chinguacousy		3,649	3,960,788	22,151	22,560	4,620	5.6	6 07	1.2	1 26
Toronto		4,760	2,791,920	24,420	23,712	4,410	8.6	5 07	1.6	93
Toronto Gore		874	789,111	6,948	6,904	2,486	8.8	7 95	3.2	2 84

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1905—Continued.

Township Municipality	Assessed area in acres (unstated)	Assessed population, 1905	Total values assessed, 1905	Total municipal and school taxes 1905		Total expenditure on roads and bridges, 1905	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
Perth:	Acres		$	$	$	$		$ c.		$ c.
Blanshard		2,352	2,498,600	17,830	18,086	6,210	7.1	7 58	2.5	2 64
Downie		2,653	2,782,191	20,522	20,528	6,669	7.4	7 74	2.4	2 52
Easthope N.		2,095	2,418,849	14,077	14,203	2,785	5.8	6 72	1.2	1 33
Easthope S.		1,883	1,862,828	10,417	10,414	2,268	5.6	5 53	1.2	1 20
Ellice		2,988	2,538,047	23,293	24,261	4,851	9.2	7 80	1.9	1 62
Elma		3,523	3,473,536	26,458	26,749	3,429	7.6	7 51	1.0	97
Fullarton		2,076	2,395,320	16,420	17,590	4,485	6.9	7 91	1.9	2 16
Hibbert		2,132	1,623,041	16,093	16,070	3,575	9.9	7 55	2.2	1 76
Logan		2,805	2,700,600	21,370	21,490	5,449	7.9	7 62	2.0	1 94
Mornington		2,903	2,382,906	22,420	23,432	5,857	9.4	7 72	2.5	2 01
Wallace		2,595	1,992,450	13,115	13,952	1,877	6.6	5 05	.9	73
Peterborough:										
Asphodel		1,603	913,080	9,249	9,351	2,629	10.1	5 77	2.9	1 64
Belmont and Methuen		1,869	245,809	6,833	8,495	679	27.8	3 66	2.8	36
Burleigh and Anstruther		707	112,397	2,695	1,954	475	24.0	3 81	4.2	67
Chandos		725	84,038	2,737	2,953	173	32.6	3 78	2.1	24
Douro		1,560	807,716	8,126	8,263	1,469	10.1	5 21	1.8	94
Dummer		1,583	623,685	6,854	6,981	843	11.0	4 33	1.4	53
Ennismore		830	354,315	3,633	2,856	255	10.3	4 38	.7	31
Galway and Cavendish		1,020	50,580	1,692	1,585	41	33.5	1 66	.8	40
Harvey		942	226,341	4,253	4,771	119	18.8	4 51	.5	13
Monaghan N.		882	615,725	4,967	4,871	1,256	8.1	5 63	2.0	1 43
Otonabee		3,004	2,008,697	17,518	24,473	3,498	8.7	5 83	1.7	1 15
Smith		2,503	1,592,890	13,769	14,316	3,501	8.6	5 50	2.1	1 40
Prescott:										
Alfred		3,292	346,800	9,584	9,499	1,892	27.6	2 91	5.5	58
Caledonia		1,675	1,071,762	8,292	8,080	1,476	7.7	4 95	1.4	1 88
Hawkesbury E.		4,506	447,150	13,532	13,497	2,411	30.3	3 00	5.4	54
Hawkesbury W.		1,565	266,014	8,691	8,322	3,757	32.7	5 55	1.4	2 40
Longueuil		957	165,600	2,837	3,044	215	17.1	2 96	1.3	22
Plantagenet N.		3,701	1,452,433	13,056	14,130	1,790	9.0	3 53	1.2	48
Plantagenet S.		3,055	959,197	11,084	10,756	1,745	11.6	3 63	1.8	57
Prince Edward:										
Ameliasburg		2,430	1,430,220	12,920	13,880	814	9.0	5 32	.6	33

Athol		997	456,485	4,949	4,941	436	10.8	4 96	1.0	44
Hallowell		2,892	1,236,635	13,037	13,163	1,036	10.5	4 51	.8	36
Hillier		1,342	899,522	7,263	7,283	355	8.1	5 41	.4	26
Marysburg N.		1,097	497,175	4,630	4,333	260	9.3	4 22	.5	24
Marysburg S.		1,142	328,975	6,285	5,197	310	19.1	5 50	.9	27
Sophiasburg		1,632	999,745	9,337	9,417	959	9.3	5 72	1.0	59
Renfrew:										
Admaston		2,155	784,975	7,195	6,533	1,582	9.2	3 34	2.0	74
Algona S.		888	143,250	1,459	1,363	23	10.2	2 64	.6	26
Alice and Fraser		2,008	584,546	3,725	3,422	298	6.4	1 86	.5	15
Bagot and Blythfield		1,396	153,630	4,010	3,899	294	26.1	2 87	1.9	21
Bromley		2,059	1,422,778	7,529	7,635	1,063	5.3	3 66	.7	52
Brougham		589	74,570	823	899	80	11.0	1 40	1.1	14
Brudenell and Lyndoch		1,324	189,185	2,968	3,011	118	15.7	2 24	.6	89
Grattan		1,870	382,040	3,669	1,564	297	9.6	1 96	.8	16
Griffith and Matawachan		653	52,500	1,197	983	95	22.8	1 83	1.8	15
Hagarty and Richards		2,914	424,059	5,182	6,124	538	12.2	1 78	1.3	18
Head, Clara, and Maria		386	30,258	878	690	19	29.0	2 27	.6	49
Horton		1,310	538,513	4,153	4,385	662	7.7	3 17	1.2	50
McNab		3,458	1,168,704	13,339	12,701	1,421	11.4	3 86	1.2	41
Pembroke		836	355,557	2,544	2,050	278	7.2	3 04	.8	33
Petewawa and McKay		1,044	89,059	1,578	1,492	26	17.7	1 51	.3	25
Radcliffe		359	44,310	1,503	1,031	78	33.9	4 19	1.8	22
Raglan		770	57,175	2,300	2,008	213	40.2	2 99	3.7	28
Rolph		1,000	184,756	2,938	3,228	163	15.9	2 94	.9	16
Ross		1,895	847,950	7,890	6,262	2,800	9.3	4 16	3.3	1 48
Sebastopol		645	55,875	1,436	1,401	32	25.7	2 23	.9	50
Stafford		1,070	256,245	3,726	3,482	564	14.5	3 48	2.2	53
Westmeath		3,226	1,747,256	14,498	13,306	3,302	8.3	4 49	1.9	1 02
Wilberforce and Algona		2,405	802,367	6,283	6,212	1,079	7.8	2 61	1.3	45
Russell: ..										
Cambridge		3,189	454,064	14,969	15,110	3,238	33.0	4 69	.7	1 01
Clarence		5,257	1,135,805	17,672	17,735	2,870	15.6	3 36	2.5	55
Cumberland		3,593	446,327	17,921	21,672	3,939	40.2	4 99	.9	1 10
Russell		2,952	94,753	16,849	15,027	1,125	24.3	5 71	1.2	38
Simcoe:										
Adjala		2,233	849,540	11,934	11,471	3,994	14.0	5 34	4.7	1 79
Essa		4,033	1,317,254	17,853	17,610	5,188	13.6	4 43	3.9	1 29
Flos		3,356	1,768,796	19,903	20,021	5,013	11.3	5 93	2.8	1 49
Gwillimbury W.		2,098	1,777,859	11,659	11,926	1,533	6.6	5 56	.9	73
Innisfil		3,555	1,694,101	19,169	20,230	3,593	11.3	5 39	2.1	1 01
Matchedash		413	59,900	1,300	861	158	21.7	3 15	2.6	38
Medonte		3,886	1,361,438	16,480	16,558	4,339	12.1	4 24	3.2	1 11
Nottawasaga		4,735	2,607,849	25,520	25,869	6,921	9.8	5 39	2.7	1 46
Orillia		3,709	628,140	15,811	12,606	3,751	25.2	4 26	6.0	1 01

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1905—Continued.

Township Municipality	Assessed area in acres (unstated)	Assessed population, 1905	Total values assessed, 1905	Total municipal and school taxes 1905		Total expenditure on roads and bridges, 1905	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Oro		3,431	1,531,047	14,344	14,958	2,281	9.4	4 18	1.5	67
Sunnidale		2,049	861,113	10,451	10,734	2,196	12.1	5 10	2.6	1 07
Tay		5,329	1,465,030	18,219	16,059	1,657	12.4	3 42	1.1	31
Tecumseth		3,026	1,696,487	21,794	21,980	5,403	12.8	7 20	3.2	1 79
Tiny		4,060	1,047,114	14,249	15,527	1,247	13.6	3 51	1.1	31
Tossorontio		1,560	750,085	8,603	8,444	2,626	11.5	5 51	3.5	1 68
Vespra		2,596	1,177,655	13,710	13,647	2,210	11.6	5 28	1.9	83
Stormont:										
Cornwall		5,891	1,781,855	20,872	21,216	3,666	11.7	3 54	2.1	62
Finch		3,759	682,825	22,302	25,083	11,668	32.7	5 93	17.1	3 10
Osnabruck		4,610	2,050,928	21,868	19,696	2,617	10.7	4 74	1.3	57
Roxborough		4,051	1,718,603	24,771	25,174	2,935	14.4	6 11	1.7	72
Victoria:										
Bexley		796	270,429	4,316	5,106	365	16.0	5 42	1.2	46
Carden		725	242,964	2,981	2,857	387	12.3	4 11	1.6	53
Dalton		527	52,045	1,433	1,693	208	27.5	2 72	4.0	39
Eldon		2,505	1,796,728	12,201	12,851	2,612	6.8	4 87	1.5	1 04
Emily		1,963	1,370,316	12,438	12,455	2,002	9.1	6 34	1.5	1 02
Fenelon		2,122	781,200	10,084	9,643	1,591	12.9	4 75	2.0	75
Laxton, Digby and Longford		701	148,850	3,033	2,860	265	20.4	4 33	1.8	38
Mariposa		3,653	2,960,898	25,421	25,030	5,311	8.6	6 96	1.8	1 45
Ops		2,154	1,820,465	16,750	16,758	4,852	9.2	7 78	2.7	2 26
Somerville		1,739	256,235	7,290	6,867	1,282	28.5	4 19	5.0	74
Verulam		1,901	514,176	9,100	9,208	1,946	17.7	4 79	3.8	1 02
Waterloo:										
Dumfries N.		1,874	2,044,818	12,529	13,042	6,394	6.1	6 69	3.0	3 40
Waterloo		6,593	3,993,230	30,061	30,287	4,242	7.5	4 56	1.1	64
Wellesley		4,908	3,872,108	24,151	25,303	6,100	8.4	4 92	2.1	1 24
Wilmot		4,548	2,894,810	23,527	23,481	9,156	8.1	5 17	3.2	2 01
Woolwich		4,106	2,831,284	24,027	24,018	14,405	8.5	5 85	5.1	3 51
Welland:										
Bertie		3,011	1,742,000	18,894	20,417	8,472	10.8	6 27	4.9	2 81
Crowland		989	428,016	5,927	5,664	993	13.8	5 99	2.3	1 01
Humberstone		2,715	962,670	10,313	11,383	1,185	10.7	3 80	1.2	44
Pelham		2,384	1,152,335	11,520	11,584	2,819	10.0	4 83	2.4	1 18

Stamford		1,893	1,460,200	16,714	14,051	5,375	11.4	8 83	3.7	2 84
Thorold		1,684	654,249	7,979	8,302	595	12.2	4 74	.9	35
Wainfleet		2,639	1,237,105	13,204	13,620	4,969	10.7	5 00	4.0	1 88
Willoughby		890	479,630	5,366	4,574	386	11.2	6 03	.8	43
Wellington:										
Arthur		2,646	2,528,725	15,268	15,264	3,722	6.0	5 77	1.5	1 40
Eramosa		2,411	2,088,780	13,970	20,509	3,829	6.7	5 79	1.8	1 59
Erin		2,965	2,101,037	15,554	16,057	1,876	7.4	5 25	.9	64
Garafraxa W.		2,074	1,721,412	16,409	12,339	4,226	9.5	7 91	2.5	2 04
Guelph		2,225	1,952,605	12,234	12,735	3,709	6.3	5 50	1.9	1 67
Luther W.		1,914	1,824,482	12,626	12,834	2,087	6.9	6 60	1.1	1 09
Maryborough		2,751	2,349,069	18,043	19,070	2,703	7.7	6 56	1.2	98
Minto		2,835	2,421,035	16,820	16,789	3,448	6.9	5 93	1.4	1 22
Nichol		1,677	1,438,353	7,576	8,384	1,248	5.3	4 52	.9	74
Peel		3,469	2,832,750	22,939	23,180	10,018	8.1	6 61	3.5	2 89
Pilkington		1,239	1,279,904	8,825	9,012	1,637	6.9	7 12	1.3	1 32
Puslinch		2,707	1,476,902	14,495	11,603	4,036	9.8	5 35	2.7	1 49
Wentworth:										
Ancaster		3,569	2,263,204	20,248	21,202	4,052	8.9	5 67	1.8	1 14
Barton		3,941	1,356,613	12,375	14,307	3,512	9.1	3 14	2.6	89
Beverly		3,693	2,773,474	20,426	18,812	3,532	7.4	5 53	1.3	96
Binbrook		1,164	1,013,555	8,141	8,375	946	8.0	6 99	.9	81
Flamborough E.		2,354	1,648,995	13,899	14,050	3,116	8.4	5 90	1.9	1 32
Flamborough W.		2,587	1,751,039	15,338	15,782	2,991	8.8	5 93	1.7	1 15
Glanford		1,499	1,054,855	7,953	8,294	470	7.5	5 31	.4	31
Saltfleet		3,222	2,508,759	21,581	22,994	5,575	8.6	6 70	2.2	1 73
York:										
Etobicoke		4,206	2,010,408	27,728	28,768	11,373	13.8	6 59	5.6	2 70
Georgina		1,619	898,180	6,285	6,274	1,648	7.0	3 88	1.8	1 02
Gwillimbury E.		3,352	1,306,420	15,152	14,723	3,249	11.6	4 52	2.5	97
Gwillimbury N.		1,483	928,695	6,875	6,855	678	7.4	4 64	.7	46
King		4,721	2,794,769	29,745	28,184	13,919	10.6	6 30	5.0	2 94
Markham		5,022	3,245,025	31,690	31,211	8,960	9.8	6 31	2.8	1 78
Scarborough		3,517	2,167,835	19,807	20,208	5,737	9.1	5 63	2.6	1 63
Vaughan		3,928	2,950,275	27,222	27,132	11,807	9.2	6 93	4.0	3 00
Whitchurch		3,135	1,263,039	14,936	13,674	2,353	9.2	4 76	1.4	75
York		11,550	6,953,780	95,028	94,752	31,735	13.7	8 23	4.5	2 70

Township Municipality	Assessed area in acres	Assessed population, 1910	Total values assessed, 1910	Total municipal and school taxes 1910		Total expenditure on roads and bridges, 1910	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
Brant:	Acres		$	$	$	$		$ c.		$ c.
Brantford	71,546	5,884	4,501,296	42,403	41,839	13,242	9.4	7 21	2.9	2 25
Burford	66,601	3,987	2,329,318	33,395	33,396	9,897	14.3	8 38	4.2	2 48
Dumfries, S.	46,559	2,311	2,518,988	19,013	19,052	3,017	7.5	8 23	1.2	1 31
Oakland	10,610	756	462,306	4,434	4,426	1,098	9.6	5 87	2.2	1 45
Onondaga	20,298	972	772,310	7,661	7,658	2,392	9.8	7 88	3.1	2 45
Bruce:										
Albemarle	57,787	1,103	380,715	7,129	6,376	3,211	18.7	6 46	8.4	2 91
Amabel	65,090	3,559	792,013	14,125	12,882	3,775	17.8	3 97	4.8	1 06
Arran	54,084	1,984	1,492,310	14,981	14,984	3,036	10.0	7 55	2.0	1 53
Brant	73,853	3,145	2,503,645	19,645	20,723	3,381	7.8	6 25	1.3	1 08
Bruce	67,380	2,332	1,830,097	17,365	17,236	4,057	9.5	7 45	2.2	1 74
Carrick	59,431	3,959	2,774,630	21,180	21,181	3,069	7.6	5 35	1.2	78
Culross	56,717	2,356	1,747,696	14,608	14,615	2,053	8.4	6 20	1.2	87
Eastnor	55,533	1,509	592,018	8,501	8,723	2,256	14.4	5 63	3.8	1 50
Elderslie	53,326	1,844	1,869,475	15,793	15,996	2,962	8.4	8 56	1.6	1 61
Greenock	62,641	2,396	1,797,162	17,740	17,580	3,765	9.9	7 40	2.1	1 57
Huron	58,094	2,883	2,583,460	21,051	20,578	4,232	8.1	7 30	1.6	1 47
Kincardine	59,036	2,301	1,829,650	19,477	19,415	3,216	10.6	8 46	1.8	1 40
Kinloss	46,123	1,690	1,522,552	12,139	12,139	2,123	8.0	7 18	1.4	1 26
Lindsay	66,762	690	141,680	3,276	4,302	1,951	23.1	4 75	13.8	2 83
St. Edmonds	60,055	363	82,050	1,981	1,979	1,040	24.1	5 46	12.7	2 87
Saugeen	36,764	1,308	1,004,849	10,113	10,105	1,317	10.1	7 73	1.3	1 01
Carleton:										
Fitzroy	60,183	2,159	1,427,510	14,412	19,885	3,178	10.1	6 68	2.2	1 47
Gloucester	83,330	5,793	1,755,903	34,464	32,527	5,236	19.6	5 95	3.0	90
Goulburn	64,786	2,138	1,890,024	14,399	14,134	1,740	7.6	6 73	.9	81
Gower, N.	32,918	1,718	1,046,220	12,302	12,247	1,446	11.8	7 16	1.4	84
Huntley	64,443	1,979	1,208,140	14,354	13,383	1,549	11.9	7 25	1.3	78
March	28,070	916	811,217	5,975	6,905	860	7.4	6 52	1.1	94
Marlborough	57,027	1,291	579,550	8,897	8,283	704	15.4	6 89	1.2	55
Nepean	56,872	4,517	2,888,928	32,258	28,210	8,439	11.2	7 14	2.9	1 87
Osgoode	90,901	3,949	2,099,930	41,422	31,210	4,297	19.7	10 49	2.0	1 09
Torbolton	25,419	747	173,825	4,293	5,445	354	24.7	5 75	2.0	47

Dufferin:										
Amaranth	63,400	2,056	1,872,130	16,282	18,184	2,222	8.7	7 92	1.2	1 08
Garafraxa, E.	40,865	1,568	1,142,393	11,185	10,145	3,441	9.8	7 13	3.0	2 19
Luther, E.	38,490	1,334	1,176,319	14,038	13,999	3,230	11.9	10 52	2.8	2 42
Melancthon	74,596	2,884	1,773,192	18,794	17,186	4,756	10.6	6 52	2.7	1 65
Mono	69,119	2,577	2,261,450	20,773	20,860	5,669	9.2	8 06	2.5	2 20
Mulmur	66,815	2,659	1,473,925	17,588	16,801	3,830	11.9	6 61	2.6	1 44
Dundas:										
Matilda	62,562	3,436	1,398,165	25,193	26,921	4,063	18.0	7 33	2.9	1 18
Mountain	57,611	2,649	1,577,283	29,847	27,282	3,866	18.9	11 27	2.5	1 46
Williamsburg	60,633	3,342	1,503,950	25,762	25,948	5,255	17.1	7 71	3.5	1 57
Winchester . . .	57,017	3,071	1,464,021	35,292	36,432	6,800	24.1	11 49	4.6	2 21
Durham:										
Cartwright	37,841	1,522	865,853	10,545	10,470	1,340	12.2	6 93	1.5	88
Cavan	61,377	2,217	1,571,300	19,429	19,801	5,588	12.4	8 76	3.6	2 52
Clarke	68,706	3,165	2,025,948	20,579	20,718	4,902	10.2	6 50	2.4	1 54
Darlington (1908)	68,717	3,488	2,378,653	22,800	23,147	4,160	9.6	6 54	1.7	1 19
Hope	61,856	2,778	2,158,980	18,063	17,593	4,042	8.4	6 50	1.9	1 46
Manvers	69,752	2,651	897,404	15,063	15,175	2,667	16.8	5 68	2.1	1 01
Elgin:										
Aldborough (1909)	75,159	3,141	1,879,011	30,491	34,889	4,273	16.2	9 71	2.3	1 36
Bayham	56,747	3,250	1,239,570	27,857	27,551	4,373	22.5	8 57	3.5	1 35
Dorchester, S.	30,564	1,525	1,716,280	19,253	19,330	4,323	11.2	12 62	2.5	2 86
Dunwich	69,159	2,984	2,522,150	28,826	29,849	354	11.4	9 66	.1	12
Malahide	62,445	3,258	2,589,666	31,026	31,504	6,089	12.0	9 52	2.4	1 85
Southwold	72,710	3,591	3,116,929	38,815	36,169	12,077	12.5	10 81	3.9	3 36
Yarmouth	69,507	4,618	3,513,036	53,918	51,657	21,866	15.3	11 68	6.2	4 73
Essex:										
Anderdon	23,096	1,843	833,719	12,902	13,702	4,531	15.5	7 00	5.4	2 46
Colchester, N.	30,096	1,861	879,404	20,820	20,200	3,540	23.7	11 19	4.0	1 90
Colchester, S.	34,348	2,680	1,162,901	25,403	24,849	2,336	21.8	9 47	2.0	87
Gosfield, N.	27,997	1,911	1,355,091	22,757	23,244	4,134	16.8	11 91	3.1	2 16
Gosfield, S.	29,822	2,148	1,406,015	20,154	19,366	5,586	14.3	9 38	4.0	2 60
Maidstone	44,440	2,762	1,870,642	29,209	25,458	6,442	15.6	10 58	3.4	2 33
Malden	21,555	1,304	972,416	12,842	13,063	2,934	13.2	9 85	3.0	2 25
Mersea	59,175	3,897	2,416,588	43,638	39,995	4,607	18.1	11 20	1.9	1 18
Rochester	32,639	1,977	1,579,468	20,537	20,340	(a) 4,779	13.0	10 39	3.0	2 42
Sandwich, E.	18,710	3,175	1,068,316	22,309	21,816	(b)10,674	20.9	7 03	9.9	3 36
Sandwich, S.	23,507	1,587	864,635	13,068	13,480	3,254	15.1	8 23	3.8	2 05
Sandwich, W.	22,513	2,476	1,070,306	18,914	19,217	6,348	17.7	7 64	5.9	2 56
Tilbury, N.	27,164	1,943	984,859	15,155	14,665	2,351	15.4	7 80	2.4	1 22
Tilbury, W.	22,627	1,809	1,007,861	16,200	16,208	2,194	16.1	8 96	2.2	1 21
(Pelee Island	9,857	652	341,680	12,418	13,895	335	36.3	19 05	1.0	51)

(a) Exclusive of Government grant for roads, $800.00
(b) " " " 2,000.00

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1910—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1910	Total values assessed, 1910	Total municipal and school taxes 1910		Total expenditure on roads and bridges, 1910	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Frontenac:										
Barrie	25,767	450	61,665	1,493	1,050	22	24.2	3 32	.4	49
Bedford	65,189	1,207	303,539	6,752	7,721	1,075	22.2	5 59	3.5	89
Clarendon	49,354	745	75,621	2,460	2,631	39	32.5	3 30	.5	05
Hinchinbrooke	65,810	1,134	207,935	6,087	5,726	811	29.3	5 37	3.9	72
Howe Island	8,002	299	80,083	2,212	2,063	451	27.6	7 40	5.6	1 51
Kennebec	44,966	978	103,417	3,651	3,135	434	35.3	3 73	4.2	44
Kingston	52,167	2,427	1,218,403	26,610	25,914	6,713	21.8	10 96	5.5	2 77
Loughborough	50,841	1,707	408,950	11,835	12,162	1,163	28.9	6 93	2.8	68
Olden	53,239	969	228,103	5,104	5,231	1,590	22.4	5 27	7.0	1 64
Oso	42,659	959	116,696	4,715	4,588	254	40.4	4 92	2.2	25
Palmerston	56,093	887	78,956	2,661	2,856	338	33.7	3 00	4.3	38
Pittsburg	47,481	1,912	807,454	20,347	22,845	2,244	25.2	10 64	2.8	1 17
Portland	53,391	1,957	902,306	17,356	15,826	3,291	19.2	8 87	3.6	1 68
Storrington	55,816	1,761	427,323	16,028	14,004	1,677	37.5	9 10	3.9	95
Wolfe Island	31,936	1,558	597,868	12,076	10,282	1,325	20.2	7 75	2.2	85
Glengarry:										
Charlottenburg	81,012	4,277	2,231,130	28,655	27,302	4,981	12.8	6 70	2.2	1 16
Kenyon	77,909	3,804	1,417,236	20,884	20,890	2,605	14.7	5 49	1.8	63
Lancaster	57,430	3,509	2,329,608	17,082	18,461	1,076	7.3	4 87	.5	31
Lochiel	71,506	4,292	2,025,583	19,841	20,291	4,242	9.8	4 62	2.1	99
Grenville:										
Augusta	74,656	3,136	1,301,335	21,822	20,889	3,772	16.8	6 96	2.9	1 20
Edwardsburg	70,135	3,113	1,197,577	20,667	25,252	3,491	17.3	6 64	2.9	1 12
Gower, S.	21,703	726	318,490	5,236	4,723	721	16.4	7 21	2.3	99
Oxford-on-Rideau	59,446	2,351	813,214	13,541	13,167	1,262	16.7	5 76	1.6	54
Wolford	46,355	1,262	932,369	10,175	10,403	1,330	10.9	8 06	1.4	1 86
Grey:										
Artemesia	68,361	2,903	1,268,379	20,997	22,190	2,708	16.6	4 33	2.1	93
Bentinck	74,862	2,648	1,512,965	13,966	14,887	2,239	9.2	5 27	1.5	85
Collingwood	66,287	3,009	1,392,218	20,204	20,113	4,898	14.5	6 71	3.5	1 63
Derby	40,250	1,845	1,053,959	11,268	11,284	3,991	10.7	6 11	3.8	2 38
Egremont	72,459	2,831	1,936,432	17,257	17,252	3,644	8.9	6 10	1.9	1 29
Euphrasia	71,818	2,590	1,280,435	16,858	16,918	2,898	13.2	6 51	2.3	1 12
Glenelg	67,340	2,156	750,480	11,824	11,874	3,368	15.8	5 48	4.5	1 56
Holland (1909) e	68,779	2,380	1,315,939	12,051	10,600	1,538	9.2	5 06	1.2	65

Keppel	92,104	3,150	777,058	17,373	17,973	3,125	22.4	5 52	4.0	99
Normanby	67,554	3,340	2,064,293	17,072	16,994	1,744	8.3	5 11	.8	52
Osprey	70,760	2,705	1,012,810	15,269	15,668	4,187	15.1	5 64	4.1	1 55
Proton	81,784	2,554	1,500,180	21,134	22,722	4,497	14.1	8 27	3.0	1 76
St. Vincent	63,527	2,585	1,367,285	20,928	19,947	5,708	15.3	8 10	4.9	2 59
Sarawak	10,514	703	205,165	4,109	4,265	688	20.0	5 84	3.4	98
Sullivan	73,528	2,372	1,625,645	14,394	14,372	2,426	8.9	6 07	1.5	1 02
Sydenham	75,726	3,075	1,868,621	20,494	20,495	4,736	11.0	6 66	2.5	1 54
Haldimand:										
Canborough	21,577	862	513,908	6,523	6,550	1,972	12.7	7 57	3.8	2 29
Cayuga, N.	32,887	1,454	946,991	9,718	10,147	2,189	10.3	6 68	2.3	1 51
Cayuga, S.	13,249	669	412,005	4,039	3,897	339	9.8	6 04	.8	51
Dunn	14,821	726	454,139	4,745	4,797	354	10.4	6 54	.8	49
Moulton	27,288	1,841	657,695	9,359	9,626	894	14.2	5 08	1.4	49
Oneida	32,607	1,290	1,048,774	9,858	9,822	733	9.4	7 64	.7	57
Rainham	25,686	1,776	793,197	8,849	8,726	946	11.2	4 98	1.2	53
Seneca	41,781	1,659	1,223,718	12,108	12,030	1,757	9.9	7 30	1.4	1 06
Sherbrooke	4,646	341	162,291	3,309	3,261	86	20.4	9 70	.5	25
Walpole	66,550	3,213	2,000,705	34,665	34,728	12,811	17.3	10 79	6.4	3 99
Haliburton:										
Anson & Hindon	12,965	240	36,680	1,076	933	38	29.3	4 48	1.0	16
Cardiff	26,736	572	59,850	2,496	2,123	183	41.7	4 36	3.1	32
Dysart (and northwards)	363,606	1,158	621,362	10,517	19,441	3,430	16.9	9 08	5.5	2 96
Glamorgan	24,001	488	32,388	1,577	2,090	23	48.7	3 23	.7	05
Lutterworth	24,899	362	38,140	1,654	1,512	51	43.4	4 57	1.3	14
Minden	38,291	1,001	91,054	3,311	3,339	160	36.4	3 31	1.8	16
Monmouth	28,820	656	85,388	2,405	2,525	38	28.2	3 67	.4	06
Sherborne (and northwards)	13,693	231	56,536	1,549	1,719	364	27.4	6 71	6.4	1 58
Snowdon	35,628	655	69,815	2,611	2,561	347	37.4	3 99	5.0	53
Stanhope	19,096	513	43,361	1,459	1,683	129	33.6	2 84	3.0	25
Halton:										
Esquesing	66,403	3,513	2,246,155	22,368	22,260	2,984	10.0	6 37	1.3	85
Nassagaweya	44,784	2,068	1,442,115	10,525	10,589	1,583	7.3	5 09	1.1	77
Nelson	46,346	2,622	2,120,144	18,514	18,735	4,163	8.7	7 06	1.9	1 59
Trafalgar	67,059	3,431	2,745,620	28,882	28,025	8,154	10.5	8 42	3.0	2 38
Hastings:										
Bangor, W., & McClure	41,103	1,085	68,111	3,168	3,312	368	46.5	2 92	5.4	34
Carlow	27,338	673	72,561	2,332	2,459	326	32.1	3 47	4.5	48
Dungannon	39,840	680	87,713	3,734	3,408	851	42.6	5 49	9.7	1 25
Elzevir & Grimsthorpe	66,151	1,248	273,467	6,548	6,734	1,134	23.9	5 25	4.1	91
Faraday	51,824	880	80,600	3,248	4,105	597	40.3	3 69	7.4	68
Hungerford	89,405	3,415	1,647,324	20,942	18,434	1,183	12.7	6 13	.7	35
Huntingdon	54,020	2,017	911,507	11,729	14,629	475	12.9	5 82	.5	24
Limerick	45,140	439	63,885	1,320	1,169	673	20.7	3 01	10.5	1 53
Madoc	65,359	2,453	850,760	16,814	14,347	1,261	19.8	6 85	1.5	51

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1910—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1910	Total values assessed, 1910	Total municipal and school taxes 1910		Total expenditure on roads and bridges, 1910	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Marmora & Lake	109,611	1,618	619,945	9,011	8,344	859	14.5	5 57	1.4	53
Mayo	21,320	504	37,381	2,092	3,847	340	56.0	4 15	10.0	67
Monteagle & Herschel	70,007	2,130	91,036	4,726	4,075	510	51.9	2 22	5.6	24
Rawdon	65,933	2,805	1,248,553	20,601	18,873	1,399	16.5	7 34	1.1	41
Sidney	69,329	4,115	2,712,768	29,783	28,386	4,914	11.0	7 24	1.8	1 19
Thurlow	53,682	3,736	4,337,175	29,584	22,541	1,718	6.8	7 94	.4	46
Tudor & Cashel	61,938	816	116,926	3,069	3,612	1,610	26.2	3 76	13.8	1 97
Tyendinaga	78,601	2,940	1,589,527	22,132	21,444	1,725	13.9	7 53	1.1	59
Wollaston	51,288	695	139,517	3,285	2,885	1,539	23.5	4 73	11.0	2 21
Huron:										
Ashfield	64,017	2,693	2,479,175	16,098	14,803	3,074	6.5	5 98	1.2	1 15
Colborne	33,380	1,472	1,368,425	10,809	10,701	2,155	7.9	7 34	1.6	1 46
Goderich	52,336	1,870	1,705,175	13,209	13,099	2,155	7.7	7 06	1.3	1 15
Gray	64,822	2,848	2,805,400	28,905	28,898	3,062	10.3	10 15	1.1	1 08
Hay	52,486	3,071	2,381,465	21,094	20,898	5,100	8.9	6 87	2.1	1 66
Howick	67,552	3,565	2,875,350	25,200	25,264	7,898	8.8	7 07	2.7	2 22
Hullett	53,478	2,432	1,983,550	17,543	17,390	3,010	8.8	7 21	1.5	1 24
McKillop	52,170	2,198	2,248,970	22,800	23,825	6,820	10.1	10 37	3.0	3 10
Morris	54,873	2,125	2,100,412	20,559	21,199	5,307	9.8	9 67	2.5	2 50
Stanley	43,351	1,785	1,955,710	16,071	16,228	4,025	8.2	9 00	2.1	2 25
Stephen	56,808	3,508	2,722,122	24,677	24,712	7,441	9.1	7 03	2.7	2 12
Tuckersmith	40,735	2,197	2,109,868	20,004	17,191	3,281	9.5	9 10	1.6	1 49
Turnberry	35,660	1,655	1,329,765	13,399	12,469	4,452	10.1	8 10	3.3	2 69
Usborne	42,682	1,850	2,417,445	19,668	26,043	3,897	8.1	10 63	1.6	2 10
Wawanosh, E.	41,730	1,575	1,569,445	12,077	12,203	2,816	7.7	7 67	1.1	1 79
Wawanosh, W.	41,699	1,723	1,606,511	10,259	10,243	2,539	6.4	5 95	1.6	1 47
Kent:										
Camden	40,631	2,164	1,513,750	20,450	21,057	4,275	13.5	9 45	2.8	1 98
Chatham	84,049	5,525	3,433,508	54,829	53,266	3,295	16.0	9 92	1.0	60
Dover	66,617	4,140	2,863,303	37,917	32,747	2,728	13.2	8 16	1.0	66
Harwich	88,296	4,817	3,968,483	45,426	45,731	14,384	11.4	9 43	3.6	2 99
Howard	58,031	2,760	2,422,620	29,016	29,917	5,583	12.0	10 51	2.3	2 02
Orford	49,827	2,698	1,794,107	25,402	25,601	3,564	14.2	9 42	1.9	1 32
Raleigh	71,211	3,888	2,786,085	46,360	46,527	3,622	16.6	11 92	1.3	93
Romney	26,264	1,737	967,504	18,835	31,222	1,492	19.5	10 84	1.5	86

Tilbury, E.	54,461	2,834	1,822,917	50,049	45,037	6,822	27.5	17 66	3.7	2 41
Zone	26,907	1,053	692,983	9,137	8,141	1,520	13.2	8 68	2.2	1 44
Lambton:										
Bosanquet	71,019	2,666	2,158,052	20,587	20,542	3,107	9.5	9 09	1.4	1 38
Brooke	74,062	2,927	2,517,595	36,350	32,792	9,242	14.4	12 42	3.7	3 16
Dawn	65,530	2,730	1,929,115	28,901	29,678	1,737	15.0	10 59	.9	64
Enniskillen	82,116	3,447	2,641,910	44,313	44,497	8,559	16.8	12 86	3.2	2 48
Euphemia	39,179	1,645	1,028,596	17,306	18,096	3,412	16.8	10 52	3.3	2 07
Moore	72,531	3,658	2,903,580	38,266	44,966	8,043	13.2	10 46	3.8	2 20
Plympton	75,015	3,035	2,494,313	27,819	27,588	5,476	11.2	9 17	2.2	1 80
Sarnia	38,668	1,894	1,239,565	19,400	20,433	7,354	15.7	10 24	5.9	3 88
Sombra	72,304	3,588	1,728,810	32,144	33,596	4,616	18.6	8 96	2.7	1 29
Warwick	70,189	2,581	2,421,704	22,575	22,651	7,103	9.3	8 75	2.9	2 75
Lanark:										
Bathurst	61,691	2,052	1,299,851	11,435	11,683	730	8.8	5 57	.6	36
Beckwith	56,424	1,338	518,180	8,544	8,527	1,333	16.5	6 39	2.4	1 00
Burgess, N.	33,485	709	434,963	3,588	3,249	442	8.2	5 06	1.0	62
Dalhousie & Sherbrooke, N.	70,034	1,450	457,217	6,719	6,747	721	14.7	4 63	1.6	50
Darling	41,832	573	107,030	1,911	1,757	306	17.9	3 34	2.9	53
Drummond	55,818	1,696	1,149,645	12,516	12,344	1,063	10.9	7 38	.9	63
Elmsley, N.	28,308	788	636,675	5,921	5,868	428	9.3	7 51	.7	54
Lanark	61,270	1,508	845,644	7,987	8,167	526	9.4	5 30	.5	35
Lavant	43,350	435	79,547	1,948	2,262	811	24.5	4 48	10.2	1 86
Montague	62,322	1,820	609,281	11,283	10,540	1,255	18.5	5 20	2.1	69
Pakenham	57,358	1,390	634,073	10,717	10,723	1,723	16.9	7 71	2.7	1 24
Ramsay	60,976	1,792	1,392,398	12,158	11,875	1,276	8.7	6 78	.9	71
Sherbrooke, S.	37,167	679	117,667	2,206	2,179	168	18.7	3 25	1.4	25
Leeds:										
Bastard & Burgess, S.	56,626	2,438	1,750,261	17,174	17,267	1,162	9.8	7 04	.7	48
Crosby, N.	42,598	950	335,257	6,514	7,159	354	19.4	6 86	1.1	37
Crosby, S. (1909)	36,521	1,415	760,180	9,252	9,417	741	12.2	6 54	1.0	52
Elizabethtown	77,033	3,432	1,406,350	23,344	23,232	4,606	12.6	6 80	3.3	1 34
Elmsley, S.	22,467	704	451,148	4,994	4,973	203	11.1	7 09	.5	29
Escott, Front	24,141	930	431,586	7,249	6,816	2,194	16.8	7 79	5.1	2 36
Kitley	49,188	1,610	1,007,040	11,558	11,615	130	11.5	7 18	.7	45
Leeds & Lansdowne, Front	57,909	2,688	1,967,908	21,458	21,411	6,355	10.9	7 98	3.2	2 36
Leeds & Lansdowne, Rear	45,365	2,205	1,414,960	14,853	14,426	5,507	10.5	6 74	3.9	2 50
Yonge, Front	31,100	1,394	494,600	9,912	9,918	2,743	20.0	7 11	5.5	1 97
Yonge & Escott, Rear	27,534	1,104	412,615	8,893	8,665	1,322	21.6	8 06	3.2	1 20
Lennox & Addington:										
Adolphustown	11,597	521	326,663	4,480	4,310	546	13.7	8 60	1.7	1 05
Amherst Island	14,660	713	355,610	4,553	4,409	732	12.8	6 39	2.1	1 03
Camden, E.	86,402	3,354	1,731,261	27,300	25,818	3,326	15.8	8 14	1.9	99
Denbigh, Abinger and Ashby	46,784	868	60,366	1,896	1,872	215	31.4	2 18	3.6	25
Ernesttown	61,797	2,867	1,477,075	22,124	24,599	4,017	15.0	7 72	2.7	1 40

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1910—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1910	Total values assessed, 1910	Total municipal and school taxes 1910		Total expenditure on roads and bridges, 1910	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Fredericksburg, N.	23,434	1,401	719,045	8,834	9,954	1,010	12.3	6 31	1.4	72
Fredericksburg, S.	20,588	950	713,825	8,253	19,272	504	11.6	8 69	.7	53
Kaladar & Anglesea	60,610	1,070	123,196	3,338	3,436	434	27.1	3 12	3.5	41
Richmond	50,085	1,970	992,365	14,269	14,439	1,336	14.4	7 24	1.3	68
Sheffield	71,161	1,692	755,475	9,004	9,081	446	11.9	5 32	5.9	26
Lincoln:										
Caistor	32,655	1,379	724,313	9,107	9,354	1,506	12.6	6 60	2.1	1 09
Clinton	24,334	2,052	1,469,413	19,996	20,144	5,533	13.6	9 74	3.8	2 70
Gainsborough	39,795	2,064	1,206,698	13,176	10,838	4,298	10.9	6 38	3.6	2 08
Grantham	19,116	2,193	1,336,590	14,476	14,456	1,600	10.8	6 60	1.2	73
Grimsby, N.	15,654	1,505	1,161,001	14,981	13,605	3,771	12.9	9 95	3.2	2 51
Grimsby, S.	18,114	1,222	691,850	9,246	9,224	1,736	13.4	7 57	2.5	1 42
Louth	18,765	1,860	1,027,304	14,277	13,901	3,456	13.9	7 68	3.4	1 86
Niagara	22,111	1,674	1,269,835	14,973	15,566	6,441	11.8	8 93	5.1	3 85
Middlesex:										
Adelaide	44,157	1,699	2,002,770	16,978	16,970	1,652	8.5	9 99	.8	97
Biddulph	39,233	2,005	1,863,490	14,922	15,071	2,535	8.0	7 44	1.4	1 26
Caradoc	62,146	3,120	2,421,445	26,827	25,649	3,632	11.1	8 60	1.5	1 16
Delaware	23,718	1,314	925,020	11,544	15,228	2,557	12.5	8 79	2.8	1 95
Dorchester, N.	51,634	3,205	2,565,006	26,020	27,702	4,156	10.1	8 12	1.6	1 30
Ekfrid	53,428	2,329	2,233,100	22,173	23,275	5,472	9.9	9 52	2.5	2 35
Lobo	47,263	1,998	2,240,526	22,277	23,769	4,666	9.9	11 15	2.1	2 34
London	99,297	8,743	5,997,047	64,298	56,141	18,262	10.7	7 35	3.0	2 09
McGillivray	66,610	2,390	2,594,210	23,163	23,231	4,340	8.9	9 69	1.7	1 82
Metcalfe	36,200	1,300	1,330,855	15,046	14,690	2,598	11.3	11 57	2.0	1 91
Mosa	47,248	1,873	1,519,337	16,727	17,102	2,157	11.0	8 93	1.4	1 15
Nissouri, W.	49,431	2,510	2,647,870	26,868	22,718	5,032	10.1	10 70	1.1	2 00
Westminster	63,526	4,744	3,979,085	39,538	40,705	10,069	9.9	8 33	2.5	2 12
Williams, E.	38,606	1,285	1,329,155	14,929	14,956	3,806	11.2	11 62	2.9	2 96
Williams, W.	35,242	1,230	1,153,751	10,988	10,907	1,997	9.5	8 93	1.7	1 62
Norfolk:										
Charlotteville	59,752	2,875	1,281,755	14,026	14,346	2,313	10.9	4 88	1.8	80
Houghton	33,574	1,847	506,200	10,452	10,396	1,863	20.6	5 66	3.7	1 09
Middleton	44,630	2,306	982,810	14,322	14,961	2,396	14.6	6 21	2.4	1 04

Townsend	64,683	3,490	2,671,806	21,434	22,154	3,095	8.0	6 25	1.2	90
Walsingham, N.	40,107	1,773	726,015	11,816	13,282	2,262	16.3	6 66	3.1	1 28
Walsingham, S.	52,586	1,606	859,010	11,406	11,168	1,553	13.3	7 10	1.8	97
Windham	66,930	3,152	1,737,179	16,994	17,893	2,236	9.8	5 39	1.3	71
Woodhouse	34,777	2,067	1,594,588	12,960	12,923	3,643	8.1	6 27	2.3	1 76
Northumberland:										
Alnwick	18,123	817	447,410	4,825	4,783	847	10.8	5 91	1.9	1 04
Brighton	48,431	2,206	1,223,204	13,459	13,190	2,313	11.0	6 10	1.9	1 05
Cramahe	46,939	2,232	1,123,255	16,759	16,064	5,302	14.9	7 51	4.7	2 38
Haldimand	76,950	3,406	1,541,195	20,266	19,433	4,020	13.1	5 95	2.6	1 18
Hamilton	62,467	3,462	2,114,255	19,722	19,302	5,833	9.3	5 70	2.8	1 68
Monaghan, S.	18,195	884	668,435	5,460	5,277	1,045	8.2	6 18	1.6	1 18
Murray	47,943	2,643	1,189,450	14,617	14,547	1,648	12.3	5 53	1.4	62
Percy	51,414	2,621	1,002,942	14,654	14,684	3,640	14.6	5 59	3.6	1 39
Seymour	67,000	2,601	1,147,256	17,800	15,918	4,075	15.5	6 84	3.6	1 57
Ontario:										
Brock	66,331	3,213	2,740,084	21,545	21,588	5,322	7.9	6 71	1.9	1 66
Mara	61,305	2,754	1,642,102	16,387	16,437	7,157	10.0	5 95	4.4	2 59
Pickering	71,802	4,721	3,345,299	31,027	30,198	9,520	9.3	6 57	2.8	2 02
Rama	35,841	1,065	236,208	4,770	5,202	451	20.2	4 48	1.9	42
Reach	63,558	2,981	2,050,327	18,335	18,280	3,463	8.9	6 15	1.7	1 16
Scott	49,316	1,814	1,383,858	13,662	13,561	2,881	9.9	7 53	2.1	1 59
Scugog	9,597	416	285,040	2,936	3,028	339	10.3	7 06	1.2	81
Thorah	32,200	1,192	1,160,332	8,861	8,670	1,717	7.6	7 43	1.5	1 41
Uxbridge	51,930	2,299	986,231	11,824	11,555	1,761	12.0	5 14	1.8	77
Whitby, E.	32,025	2,644	1,702,815	16,488	17,055	6,374	9.7	6 24	3.7	2 41
Whitby	30,531	1,781	1,509,044	16,288	16,281	6,563	10.8	9 15	4.3	3 69
Oxford:										
Blandford	29,656	1,410	1,271,965	13,991	13,745	2,185	11.0	9 92	1.7	1 55
Blenheim	66,906	4,034	3,162,234	34,603	34,719	10,183	10.9	8 58	3.2	2 52
Dereham	64,927	3,597	3,269,105	40,853	43,214	8,545	12.5	11 36	2.6	2 38
Nissouri, E.	46,532	2,419	2,768,736	23,050	23,289	5,307	8.3	9 53	1.9	2 19
Norwich, N.	33,893	2,166	1,703,000	23,682	22,438	7,829	13.9	10 93	4.6	3 61
Norwich, S.	36,730	2,105	1,151,007	16,269	16,423	4,611	14.1	7 73	4.0	2 19
Oxford, E.	34,673	1,864	1,561,500	21,508	20,539	5,794	13.8	11 54	3.7	3 11
Oxford, N.	21,075	1,104	1,122,742	9,634	9,637	2,057	8.6	8 73	1.8	1 86
Oxford, W.	25,855	1,832	1,442,272	14,936	16,261	2,909	10.4	8 15	2.0	1 59
Zorra, E.	57,075	3,282	3,820,466	31,910	31,841	10,882	8.4	9 72	2.8	3 32
Zorra, W.	55,041	2,458	2,910,331	29,095	28,473	4,857	10.0	11 84	1.7	1 98
Peel:										
Albion	56,220	2,300	1,570,936	15,990	16,000	3,537	10.2	6 95	2.3	1 54
Caledon	68,567	3,447	1,810,385	23,187	24,316	6,805	12.8	6 73	3.8	1 97
Chinguacousy	80,024	3,282	3,972,200	30,628	29,537	5,627	7.7	9 33	1.4	1 71
Toronto	64,857	5,313	3,349,115	37,751	37,782	13,876	11.3	7 11	4.1	2 61
Toronto Gore	19,009	827	798,980	8,099	8,061	2,950	10.1	9 79	3.7	3 57

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1910—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1910	Total values assessed, 1910	Total municipal and school taxes 1910		Total expenditure on roads and bridges, 1910	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Perth:										
Blanshard	45,973	2,242	2,515,152	22,185	22,442	(a)4,388	8.8	9 90	1.7	1 96
Downie	48,568	2,489	2,739,960	21,306	21,158	(b)7,781	7.8	8 56	2.9	3 16
Easthope, N.	43,120	1,964	2,382,473	16,867	17,688	3,178	7.1	8 59	1.3	1 62
Easthope, S.	23,525	1,316	1,648,065	11,428	11,293	1,496	6.9	8 68	.9	1 14
Ellice	54,455	2,903	2,386,835	28,318	28,722	3,347	11.9	9 75	1.4	1 15
Elma	67,435	3,532	3,561,534	36,530	36,666	6,063	10.3	10 34	1.7	1 72
Fullarton	40,269	1,879	2,287,285	19,901	19,810	5,438	8.7	10 59	2.4	2 89
Hibbert	41,335	2,026	2,125,149	19,179	19,174	2,223	9.0	9 47	1.0	1 10
Logan	53,774	2,673	2,733,758	26,032	26,239	7,878	9.5	9 74	2.9	2 95
Mornington	49,820	2,754	2,280,204	26,192	26,882	6,142	11.5	9 51	2.7	2 23
Wallace	49,970	2,361	1,997,000	17,850	18,308	3,369	8.9	7 56	1.7	1 43
Peterborough										
Asphodel	37,800	1,542	879,305	12,087	11,883	2,230	13.7	7 84	2.5	1 45
Belmont & Methuen	78,080	1,609	221,069	6,493	8,336	1,852	29.4	4 04	8.4	1 15
Burleigh & Anstruther	31,777	614	109,481	3,022	2,545	112	27.6	4 92	1.0	18
Chandos	43,831	720	85,076	3,155	3,294	175	37.1	4 38	2.1	24
Douro	38,425	1,558	802,234	10,533	10,473	2,572	13.1	6 76	3.2	1 65
Dummer	69,776	1,450	637,285	8,547	8,676	1,284	13.4	5 89	2.0	89
Ennismore	17,269	763	356,810	5,104	4,047	1,067	14.3	6 69	3.0	1 32
Galway & Cavendish	51,700	976	52,000	1,728	1,594	51	33.2	1 77	1.0	05
Harvey	67,500	835	208,698	4,855	4,330	743	23.3	5 81	3.6	89
Monaghan, N.	14,046	1,379	721,343	6,807	7,776	3,174	9.4	4 94	4.4	2 30
Otonabee	64,081	2,578	2,019,456	20,620	20,566	4,292	10.2	8 00	2.1	1 66
Smith	57,798	2,477	1,623,650	16,343	16,378	3,657	10.1	6 60	2.3	1 48
Prescott:										
Alfred	43,552	3,210	1,381,475	12,481	11,207	1,410	9.0	3 89	1.0	44
Caledonia	43,163	1,849	1,054,579	9,123	8,470	1,778	8.7	4 93	1.7	96
Hawkesbury, E.	56,374	4,022	451,910	18,192	18,450	6,295	40.3	4 52	13.9	1 57
Hawkesbury, W.	28,890	1,301	642,627	10,150	10,092	3,343	15.8	7 80	5.2	2 57
Longueuil	18,571	1,083	457,200	4,166	3,804	158	9.1	3 85	.3	15
Plantagenet, N.	50,758	3,893	1,125,265	16,681	16,092	2,799	14.8	4 28	2.5	72
Plantagenet, S.	48,973	3,190	1,017,975	14,570	12,414	2,708	14.3	4 57	2.7	85
Prince Edward:										
Ameliasburg	44,447	2,389	1,257,770	14,279	14,578	1,078	11.4	5 98	.9	45
Athol	23,377	996	445,385	5,746	5,733	560	12.9	5 77	1.3	56

(a) Exclusive of Government grant for roads, $1,563.00
(b) " " " " 1,487.00

Hallowell	43,708	2,418	1,124,893	16,104	16,223	1,211	14.3	6 66	1.1	50
Hillier	31,890	1,451	871,030	10,594	10,107	1,231	12.2	7 30	1.4	85
Marysburg, N.	23,627	1,012	486,800	7,148	6,182	1,049	14.7	7 06	2.2	1 04
Marysburg, S.	24,490	1,028	536,460	5,864	5,657	265	10.9	5 70	.5	26
Sophiasburg	43,100	1,903	1,010,850	11,755	11,914	423	11.6	6 18	.4	22
Renfrew:										
Admaston, S.	72,305	1,874	783,095	7,360	7,626	807	9.4	3 93	1.0	43
Algona, S.	30,542	701	108,100	1,795	2,093	15	16.6	2 56	.1	02
Alice & Fraser	58,295	1,967	573,500	5,947	6,079	248	10.4	3 02	.4	13
Bagot & Blythfield	61,640	1,160	152,283	3,888	3,593	393	25.5	3 35	2.6	34
Bromley	49,685	1,773	1,304,358	11,872	14,650	831	9.1	6 70	.6	47
Brougham	23,457	489	77,265	1,192	1,439	33	15.4	2 44	.4	07
Brudenell & Lyndoch	64,522	1,242	188,035	2,860	3,099	307	15.2	2 30	1.6	25
Grattan	63,725	1,877	294,260	4,391	4,445	236	14.9	2 34	.8	13
Griffith & Matawatchan	26,589	592	55,921	1,000	1,075	49	17.9	1 69	.9	08
Hagarty & Richards	60,417	2,206	370,860	5,862	6,608	555	15.8	2 66	1.5	25
Head, Clara & Maria	16,085	348	64,154	1,807	998	.....	28.2	5 19	.....	.....
Horton	38,314	1,361	533,878	5,602	5,400	313	10.5	4 12	.6	23
McNab	62,705	3,443	1,178,190	16,047	16,412	1,380	13.6	4 66	1.2	40
Pembroke	8,310	1,074	317,509	2,933	2,457	98	9.2	2 73	.3	09
Petewawa & McKay	19,656	807	72,173	1,350	1,240	250	18.7	1 67	3.5	31
Radcliffe	22,622	362	46,815	1,338	957	120	28.6	3 70	2.6	33
Raglan	35,485	728	59,175	3,018	2,182	99	51.0	4 15	1.7	14
Rolph	34,128	913	166,860	2,924	2,068	100	17.5	3 20	.6	11
Ross	52,149	1,859	889,375	11,471	11,804	2,972	12.9	6 17	3.4	1 60
Sebastopol	33,074	595	57,643	1,403	1,395	178	24.3	2 36	3.1	30
Sherwood, Jones & Burns	46,446	1,363	182,590	3,181	2,683	167	17.4	2 33	.9	12
Stafford	21,324	1,061	698,406	4,332	4,694	719	6.2	4 08	1.0	68
Westmeath	69,841	2,893	1,741,084	16,965	20,506	3,264	9.7	5 86	1.9	1 13
Wilberforce & Algona	72,160	2,226	546,978	7,331	7,366	773	13.4	3 29	1.4	35
Russell:										
Cambridge	59,012	3,231	1,049,936	18,589	16,425	3,136	17.7	5 75	3.0	97
Clarence	70,706	4,628	1,134,308	21,601	19,464	2,735	19.0	4 67	2.4	59
Cumberland	74,223	3,798	1,692,533	27,720	34,355	10,931	16.4	7 30	6.5	2 88
Russell	46,614	3,410	1,575,260	26,578	26,099	2,843	16.9	7 79	1.8	83
Simcoe:										
Adjala	46,208	2,160	1,645,075	16,191	14,712	2,886	9.8	7 50	1.8	1 34
Essa	67,000	2,937	1,934,612	23,994	23,156	8,836	12.4	8 17	4.6	3 01
Flos	63,650	3,037	2,015,519	24,837	25,561	3,498	12.3	8 18	1.7	1 15
Gwillimbury, W.	46,840	2,114	1,952,360	14,774	14,379	1,398	7.6	6 99	.7	66
Innisfil	68,828	3,148	2,440,208	21,542	21,537	2,997	8.8	6 84	1.2	95
Matchedash	33,642	429	115,491	2,237	2,122	1,390	19.4	5 21	12.0	3 24
Medonte	66,167	3,837	1,196,980	16,978	17,327	2,466	14.2	4 42	2.1	64
Nottawasaga	90,077	4,445	2,585,739	29,576	29,918	4,081	11.4	6 65	1.6	92
Orillia	77,555	3,220	644,507	18,451	19,444	4,620	28.6	5 73	7.2	1 43

ONTARIO (ORGANIZED) TOWNSHIP STATISTICS FOR 1910—Continued.

Township Municipality	Assessed area in acres	Assessed population, 1910	Total values assessed, 1910	Total municipal and school taxes 1910		Total expenditure on roads and bridges, 1910	Mills on $	Total tax imposed per head	Mill rate for roads and bridges expenditure	Roads and bridges expenditure per head
				Imposed	Received					
	Acres		$	$	$	$		$ c.		$ c.
Oro	73,240	3,322	1,581,828	18,345	18,521	1,265	11.6	5 52	.8	38
Sunnidale	58,110	2,299	963,966	15,369	15,335	3,627	15.9	6 69	3.8	1 58
Tay	46,841	5,907	2,222,950	25,509	31,219	3,003	11.5	4 32	1.4	51
Tecumseth	66,102	2,703	3,396,350	24,012	24,039	11,244	7.1	8 88	3.3	4 16
Tiny	79,086	3,508	1,318,968	19,572	19,080	2,934	14.8	5 58	2.2	84
Tossorontio	44,497	1,489	752,083	8,027	8,024	680	10.7	5 39	.9	46
Vespra	63,210	2,297	1,395,349	14,455	14,611	2,001	10.4	6 29	1.4	87
Stormont:										
Cornwall	63,631	5,604	1,277,296	38,018	36,149	8,801	29.8	6 78	7.2	1 57
Finch	49,280	2,795	1,137,211	24,903	26,493	2,790	21.9	8 91	2.5	1 00
Osnabruck	62,040	4,597	2,029,350	31,740	31,873	2,489	15.6	6 90	1.2	54
Roxborough	71,270	3,634	1,656,443	38,000	37,583	3,564	22.9	10 46	2.2	98
Victoria:										
Bexley	28,432	660	237,864	4,136	3,690	624	17.4	6 27	2.6	95
Carden	44,525	654	226,335	3,795	3,680	432	16.8	5 80	1.9	66
Dalton	29,849	464	110,725	2,241	2,346	178	20.2	4 83	1.6	38
Eldon	60,032	2,396	1,524,954	17,447	18,645	3,092	11.4	7 28	2.0	1 29
Emily	59,726	1,854	1,642,591	13,722	13,719	2,311	8.4	7 40	1.4	1 25
Fenelon	51,466	2,023	1,116,565	13,055	16,155	1,887	11.7	6 45	1.7	93
Laxton, Digby & Longford	73,978	622	174,417	3,795	3,212	742	21.8	6 10	4.3	1 19
Mariposa	75,064	3,321	3,437,968	30,349	30,283	5,937	8.8	9 14	1.7	1 79
Ops	56,503	1,971	2,127,960	20,546	19,678	4,245	9.7	10 42	2.0	2 15
Somerville	64,262	1,636	254,080	7,590	7,341	1,521	29.9	4 64	6.0	93
Verulam	55,341	1,896	908,954	12,913	12,932	2,287	14.2	6 81	2.5	1 21
Waterloo:										
Dumfries, N.	44,445	1,909	2,089,567	16,109	15,478	5,271	7.7	8 44	2.5	2 76
Waterloo	81,820	6,715	4,045,845	39,803	40,061	9,164	9.8	5 93	2.3	1 36
Wellesley	65,809	4,330	3,769,100	29,014	33,392	10,897	7.7	6 71	2.9	2 52
Wilmot	60,902	4,469	2,943,295	28,644	28,653	6,908	9.7	6 41	2.3	1 55
Woolwich	53,567	3,894	2,815,605	26,300	26,565	5,349	9.3	6 75	1.9	1 37
Welland:										
Bertie	35,095	3,132	2,028,880	28,132	26,656	12,305	13.9	8 98	6.1	3 93
Crowland	19,118	1,053	806,083	7,871	7,679	1,871	9.8	7 47	2.3	1 78
Humberstone	30,836	2,960	1,185,770	14,426	14,910	1,361	12.2	4 87	1.1	46
Pelham	28,727	2,513	1,150,080	15,884	15,420	4,118	13.8	6 32	3.6	1 64

Stamford	21,491	2,789	1,554,955	22,368	23,220	7,655	14.4	8 02	4.9	2 74
Thorold	22,650	1,703	781,434	14,639	12,194	2,887	18.7	8 60	3.7	1 70
Wainfleet	50,635	2,550	1,142,033	16,051	15,823	1,916	14.1	6 29	1.7	75
Willoughby	18,779	846	557,370	5,400	6,376	831	9.7	6 38	1.5	98
Wellington:										
Arthur	64,466	2,425	2,443,117	21,450	20,067	6,260	8.8	8 85	2.6	2 58
Eramosa	44,461	2,358	2,087,555	16,379	16,071	3,500	7.8	6 95	1.7	1 48
Erin	70,592	3,011	2,118,055	19,185	18,289	2,890	9.1	6 37	1.4	96
Garafraxa, W.	47,084	1,815	1,708,767	16,722	17,019	4,174	9.8	9 21	2.4	2 30
Guelph	37,335	2,225	1,992,055	17,732	17,298	5,379	8.9	7 97	2.7	2 42
Luther, W.	49,783	1,849	1,509,582	15,122	15,189	2,571	10.0	8 18	1.7	1 39
Maryborough	56,470	2,637	2,404,715	22,679	23,188	3,137	9.4	8 60	1.3	1 19
Minto	69,272	2,574	2,440,946	21,254	21,606	4,474	9.7	8 26	1.8	1 35
Nichol	27,167	1,528	1,308,880	10,101	9,789	1,063	7.7	6 61	.8	70
Peel	74,566	3,327	2,875,400	26,279	26,368	3,468	9.1	7 90	1.2	1 04
Pilkington	29,143	1,149	1,322,491	10,715	10,875	2,123	8.1	9 33	1.6	1 85
Puslinch	58,339	2,609	1,475,122	16,680	16,862	2,857	11.3	6 39	1.9	1 10
Wentworth:										
Ancaster	48,105	3,830	2,409,125	24,606	24,116	5,479	10.2	6 42	2.3	1 43
Barton	10,799	3,644	953,836	17,925	18,329	15,595	18.8	4 92	16.3	4 28
Beverly	69,738	3,200	2,785,176	25,073	29,146	3,227	9.0	7 84	1.2	1 01
Binbrook	26,444	1,126	1,016,148	10,795	10,973	1,472	10.6	9 59	1.4	1 31
Flamborough, E.	33,762	2,335	1,862,478	18,625	17,188	4,215	10.0	7 98	2.3	1 81
Flamborough, W.	31,107	2,566	1,681,940	16,263	16,454	2,488	9.7	6 34	1.5	97
Glanford	23,539	1,408	1,086,096	9,694	8,020	1,037	8.9	6 88	1.0	74
Saltfleet	28,304	3,176	2,033,586	29,267	28,847	7,681	14.4	9 22	3.8	2 42
York:										
Etobicoke	28,789	5,466	2,548,942	45,116	41,721	21,746	17.7	8 25	8.5	3 98
Georgina	35,105	1,491	915,922	8,113	8,111	1,733	8.9	5 44	1.9	1 16
Gwillimbury, E.	57,942	3,251	1,667,300	21,865	21,658	3,038	13.1	6 73	1.8	93
Gwillimbury, N.	31,476	1,499	1,013,000	8,270	8,287	1,106	8.2	5 52	1.1	74
King	88,787	4,636	3,569,915	31,114	32,440	6,344	8.7	6 71	1.8	1 37
Markham	67,219	5,054	4,146,399	40,028	38,943	13,301	9.7	7 92	3.2	2 63
Scarborough	42,547	3,426	2,600,151	31,129	31,091	13,232	12.0	9 09	5.1	3 86
Vaughan	67,037	3,957	3,608,070	33,531	37,448	12,677	9.3	8 47	3.5	3 18
Whitchurch	60,518	3,060	1,822,297	17,833	18,205	2,627	9.8	5 83	1.4	86
York	54,725	11,561	6,781,028	102,082	106,827	53,941	15.1	8 83	8.0	4 67

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RULES OF PRACTICE

UNDER THE

MUNICIPAL DRAINAGE ACT

ONTARIO

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

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Copy of an Order-in-Council approved by His Honour the Lieutenant-Governor, the 30th day of March, A.D. 1914.

Upon the recommendation of the Honourable the Attorney General, the Committee of Council advise that pursuant to the provisions of sub-section 1 of Section 118 of The Municipal Drainage Act, Chapter 198, R.S.O. 1914, the Rules submitted herewith framed by the Referee regulating the practice and procedure to be followed in all proceedings before him under the said Act be approved by Your Honour.

The Committee further advise that all Rules heretofore approved be rescinded.

Certified,

J. Lonsdale Capreol,
Clerk, Executive Council.

RULES OF PRACTICE UNDER THE MUNICIPAL DRAINAGE ACT (ONTARIO).

(1) These Rules shall take effect on the 15th day of April, 1914.

(2) The provisions of The Interpretation Act and the interpretation clauses of "The Judicature Act" and The Municipal Drainage Act shall apply to these rules unless there is anything in the subject or context repugnant thereto.

(3) In these rules "Referee" shall mean the Referee for the time being appointed for the purpose of the Drainage laws pursuant to the provisions of The Municipal Drainage Act.

(4) As to all matters not provided for by these rules and by The Municipal Drainage Act the Consolidated Rules of Practice of the Supreme Court of Ontario shall be followed so far as they are applicable.

(5) In all proceedings before the Referee the following style of cause shall be sufficient

IN THE ONTARIO DRAINAGE COURT

between A. B., Plaintiff (or Appellant or Applicant as the case may be) and C. D., Defendant (or Respondent).

(6) Where the plaintiff institutes any proceedings by a solicitor the notice of appeal or other initiating notice shall contain by endorsement or otherwise the solicitor's name or firm name and place of business where notices, orders, appointments and other documents, proceedings and written communications may be served.

(7) (1) Where a plaintiff institutes any proceedings in person the notice of appeal or initiatory notice shall contain by endorsement or otherwise his place of residence and occupation. (2) If his place of residence is more than two miles from the office of the Clerk of the County Court of the County in which the municipality initiating the drainage work in question is situated there shall be stated also another proper place, which shall not be more than two miles from such office, to be called his address for service, where notices, orders, appointments and other documents, proceedings and written communications may be served. (3) If the requirements of this rule are not complied with the opposite party shall be at liberty to proceed by posting up in the office of the Clerk of the County Court all notices, orders, appointments and other documents, proceedings and written communications requiring service.

(8) Every notice initiating proceedings to which an appearance is required to be entered shall be endorsed with a notice requiring an appearance to be entered in the proper office and stating that in default the defendant will not be entitled to notice of any further proceeding. Such notice may be in the form following:—

TAKE NOTICE that you are required within ten days after the service of this notice on you, inclusive of the day of such service, to cause an appearance to be entered for you in the office of the Clerk of the County Court of the County of ..... and in default of your so doing you will not be entitled to notice of any further proceedings herein.

(9) Whenever it is provided by The Municipal Drainage Act or by these rules that service of any document is to be made upon a municipal corporation, such service may be made by serving such document personally upon the Reeve or other head Officer or upon the Clerk of such Municipal Corporation.

(10) Any notice claiming damages, any notice of motion or any other document by which any proceeding under The Municipal Drainage Act is or may be initiated or originated, shall be deemed to have been properly served upon the respondent or defendant if service is accepted, and (where necessary) an undertaking to appear given by a solicitor on behalf of such respondent or defendant.

(11) Where by The Municipal Drainage Act it is provided that an affidavit of service of a copy of a notice of appeal or of any other notice shall be fyled with the County Court Clerk an acceptance of service by a solicitor or firm of solicitors duly verified may be fyled in lieu of such affidavit.

(12) A defendant or respondent served with any notice of appeal, or with any notice under section 98 of the Municipal Drainage Act, other than a notice of motion on an application, shall appear thereto within ten days after such service, including the day of service.

(13) A defendant shall appear by fyling with the Clerk of the County Court in whose office the notice of appeal or other notice has been fyled a memorandum in writing requesting the entry of such appearance and stating the name and place of business of the solicitor by whom such memorandum is fyled, or, if the defendant appears in person, giving his address and naming a place to be called his address for service which shall not be more than two miles from the office where the appearance is required to be entered.

(14) If the memorandum of appearance does not contain the address of the solicitor or of the Defendant (as the case may be) it shall not be fyled; and if such address is illusory or fictitious the appearance may be set aside by the Referee, and thereafter unless otherwise ordered by the Referee the plaintiff may proceed as if the defendant had not appeared.

(15) Upon a memorandum of appearance being fyled the officer shall forthwith note the same in the procedure book.

(16) A defendant may appear at any time before judgment. If the defendant appears after the time limited for appearance he shall forthwith give notice thereof, and if he appears after the time appointed and omits to give such notice the plaintiff may proceed as in case of non-appearance.

(17) In default of appearance the party in default shall not be entitled to notice of any further proceedings other than by posting up in the office where the appearance is required to be entered.

(18) Either party shall be at liberty as soon as the defendant has appeared or the time for appearing has expired to apply to the Referee on two clear days' notice to the opposite party for a general order fixing the procedure to be followed, and upon such application the Referee shall, unless there is some good reason for postponing the giving of directions as to any particular proceedings, make a general order directing all the subsequent proceedings, down to the inspection, to be taken by all parties, and fixing the times therefor, and the several provisions of such general order shall be carried out by praecipe orders issued by the Clerk of the County Court in whose office the general order is fyled.

(19) A copy of the general order and of any other orders and appointments made by the Referee shall be forthwith served upon the opposite party and fyled with the clerk in whose office the proceedings are pending.

(20) Upon any application under the provisions of The Municipal Drainage Act which is made upon affidavit material, copies of the affidavits shall be served with notice of the application, and either party may thereafter apply to the

Referee for a general order fixing the procedure in like manner and with like results as provided for in the preceding Rule 18, and in the event of no such application for a general order of procedure being made affidavits in answer shall be fyled and served within ten days after service of the notice and affidavits in reply shall be fyled and served within ten days after the service of the affidavits in answer.

(21) When in the opinion of the Referee it is desirable for the due despatch of business and for the public convenience to appoint fixed dates for sittings, the Referee may appoint dates for such counties as he considers advisable, and shall notify the Clerk of the County Court in each of the Counties affected, and it shall be the duty of the Clerk thereupon to cause notice thereof to be posted in his office.

(22) Whenever sittings have been appointed as provided by Rule 21, any party affected may bring on for trial or hearing at such sittings any action or proceeding under the Act by giving to the other party or parties affected fourteen days' notice thereof and by setting the same down by praecipe to the Clerk of the County Court not less than six clear days before the date appointed for such sitting.

(23) Notwithstanding the provisions of the foregoing rules, the Referee may upon application made to him for that purpose in any case which appears to him to be of sufficient urgency appoint a special date for the trial or hearing of any action or proceeding under the Act.

(24) Where no fixed date has been appointed as in the foregoing Rules provided, the Referee shall, upon application made to him for that purpose or as part of a general procedure order, fix a date for the hearing of any trial under the Act.

(25) The party instituting the proceedings shall at least one day clear before the trial deposit with the Clerk for the use of the Referee a copy certified by the Clerk of the notice initiating the proceedings, all defences and objections to the appeal or reference and any other papers fyled showing the issues to be tried.

(26) Upon the trial of appeals under section 67 of the Municipal Drainage Act it shall, unless otherwise directed by the Referee, be the duty of the initiating municipality to produce the original report, plans, specifications, assessments and estimates of the engineer or surveyor and the provisional by-law in question, and also to produce the engineer or surveyor for cross-examination. Upon the trial of any other proceeding the Referee may in his discretion direct similar production.

(27) Whenever during the progress of any trial or other proceedings under The Municipal Drainage Act, the Referee requires a copy of any evidence taken by the stenographer, the same shall be supplied by the party initiating the proceedings and unless otherwise ordered the costs thereof shall be taxed in the cause.

(28) Unless the Referee so directs non-compliance with these rules shall not render any notice or any other proceedings void, but the same may be set aside either wholly or in part as irregular, or may be amended or otherwise dealt with as to the Referee may seem just.

(29) An application to set aside any proceeding for irregularity shall be made within a reasonable time, and shall not be allowed if the party applying has taken a fresh step after knowledge of the irregularity.

(30) Every County Court Clerk shall at the request of any party, and upon receiving a praecipe for the purpose and payment of the necessary postage and express charges for the transmission and return of the same, transmit to the Referee the proceedings on fyle in his office.

(31) Unless the Referee gives leave to the contrary there shall be at least two clear days between the service of a notice of motion and the day for hearing and in the computation of such two clear days Sundays and days on which the offices are closed shall not be reckoned.

(32) The Referee may enlarge or abridge the time appointed by these rules or fixed by order for doing any act or taking any proceedings upon such terms as may seem just, and such enlargement may be ordered although the application for the same is not made until after the expiration of the time appointed or allowed.

(33) Unless by consent, or in case of urgency by leave of the Referee, no trial shall take place or motion be heard during the "Long Vacation" or the "Christmas Vacation" observed by the Supreme Court of Ontario.

(34) Unless otherwise directed, costs shall be taxed by the Clerk of the County Court with whom the papers are fyled.

(35) Costs shall be taxed and allowed on the scale of the High Court, County Court or Division Court as the Referee shall direct in his decision or report.

(36) Where costs are allowed the Referee shall fix the amount of counsel fees to be taxed.

(37) All Rules heretofore passed are rescinded as of the date upon which these Rules take effect.

Temiskaming and Northern Ontario Railway Commission

THE MINING INDUSTRY

In that Part of

NORTHERN ONTARIO

Served by the

Temiskaming and Northern Ontario Railway

ONTARIO GOVERNMENT RAILWAY

SIR JAMES P. WHITNEY, PREMIER

CALENDAR YEAR 1913

By ARTHUR A. COLE
Mining Engineer

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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To His Honour Sir John Morison Gibson, K.C.M.G.,

Lieutenant-Governor of Ontario.

May it Please Your Honour:

The undersigned has the honour to present to Your Honour, Report of the Mining Engineer on the Mining Industry in that part of Northern Ontario served by the Temiskaming and Northern Ontario Railway for the calendar year 1913.

Respectfully submitted,

J. O. Reaume,

Minister of Public Works.

Hon. J. O. Reaume,

Minister of Public Works,

Toronto, Ontario.

Sir,—I have the honour, by direction, to submit to you, Report of the Mining Engineer on the Mining Industry, in that part of Northern Ontario served by the Temiskaming and Northern Ontario Railway, for the calendar year 1913.

I have the honour to be,

Sir,

Your obedient servant,

A. J. McGee,

Secretary-Treasurer.

TEMISKAMING AND NORTHERN ONTARIO RAILWAY COMMISSION.

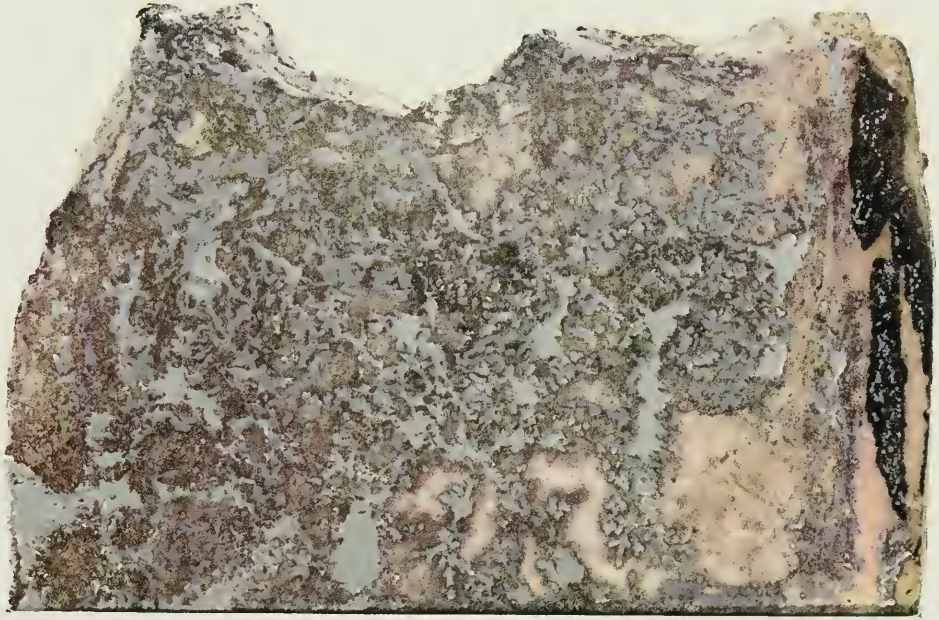
J. L. ENGLEHART, Chairman.

DENIS MURPHY, Commissioner.

FRED DANE, Commissioner.

A. J. McGEE, Secretary-Treasurer.

A. A. COLE, Mining Engineer.



Specimen of Silver Ore from the La Rose Mine, Cobalt, Ontario, Canada.

THE MINING INDUSTRY IN RELATION TO THE TEMISKAMING & NORTHERN ONTARIO RAILWAY.

The fertility of the soils in the Clay Belt of Northern Ontario is becoming better known every year, but it is not necessary to go back many years to find complete ignorance on this subject among many otherwise well informed people. To these the building of Ontario's Government Railway, north from the Canadian Pacific Railway for over 100 miles, to reach the agricultural lands of the Clay Belt seemed the veriest waste of money.

The possibility of other industries helping out agriculture in building up business for the railway was considered by the promoters of the colonization idea, but with little thought of the importance these industries were soon to assume. The railway was thus started and the wisdom of the decision was soon shown in the large increases in the values of the timber limits being sold by the Ontario Government.

When the railway reached the present site of Cobalt, a new chapter in the history of this enterprise was started by the introduction of the Mining Industry. The business of the railway due to this industry rapidly assumed prime importance and this position it is likely to hold for many years to come.

The importance of mining was further increased by the discoveries later of the silver districts of Elk Lake, Gowganda and South Lorrain, and the gold districts of Porcupine and Kirkland Lake.

The following statement of freight revenue on the Timiskaming and Northern Ontario Railway for the years 1911, 1912 and 1913 shows the relative positions of the agricultural, lumbering and mining industries eight, nine and ten years after the discovery of Cobalt.

Industry	1911			1912			1913		
	Tonnage	Revenue	%	Tonnage	Revenue	%	Tonnage	Revenue	%
		$ c.			$ c.			$ c.	
Agriculture	69,925	75	6.5	56,325	94,858 31	10	82,092	111,928 69	12
Lumbering	152,400	97	14	95,753	150,623 20	17	143,660	197,383 23	21
Mining	510,729	74	48.5	247,830	400,821 50	44	328,366	444,499 55	48
Miscellaneous	326,445	81	31	163,342	260,591 59	29	129,978	173,551 65	19
Totals	1,059,502	27	100	563,250	906,894 60	100	684,096	927,363 12	100

Under the heading of miscellaneous is placed the income from freight for construction and also the through freight for the National Transcontinental Railway.

In the above statement all business due to the prosecution of each industry is segregated without any consideration of class of commodity comprising the freight handled. Thus at a station whose business is entirely due to the lumbering industry in the vicinity, the whole of the business of that section is credited to the lumbering industry though the freight handled will comprise machinery, foodstuffs, etc., as well as lumber.

In the report for the fiscal year 1913, the Department of Railways and Canals of Canada publishes the following table based on the class of commodity handled by the railways of Canada.

—	1907 %	1908 %	1909 %	1910 %	1911 %	1912 %	1913 %
Products of agriculture	16.85	14.91	17.91	17.31	17.17	19.34	16.31
Products of animals	4.37	3.92	4.21	3.71	4.00	3.53	3.01
Products of mines	32.68	35.92	35.81	35.11	35.87	35.18	38.16
Products of forests	18.11	20.49	17.35	17.54	16.57	15.82	15.75
Manufactures	14.11	10.56	11.82	13.44	17.00	18.16	18.68
Merchandise	4.08	3.18	3.58	3.39	3.06	3.03	4.14
Miscellaneous	9.79	11.02	9.32	9.50	6.33	4.94	3.95

An interesting comparison may here be made with figures compiled for the United States Interstate Commerce Commission from whose reports the following table is taken. It shows the freight traffic movement by class of commodity, originating on line of reporting roads in the United States for the fiscal years 1900 and 1906.

Class of Commodity.	1900.		1906.	
	Tonnage reported as originating on line.	% of aggregate.	Tonnage reported as originating on line.	% of aggregate.
Products of agriculture	53,468,496	10.35	70,201,720	8.56
Products of animals	14,844,837	2.87	19,002,825	2.32
Products of mines	271,602,072	52.59	435,450,476	53.09
Products of forests	59,956,421	11.61	92,187,351	11.24
Manufactures	69,257,145	13.41	121,457,738	14.81
Merchandise	21,974,201	4.26	33,319,615	4.06
Miscellaneous	25,329,045	4.91	48,543,902	5.92
	516,432,217	100.00	820,164,627	100.00

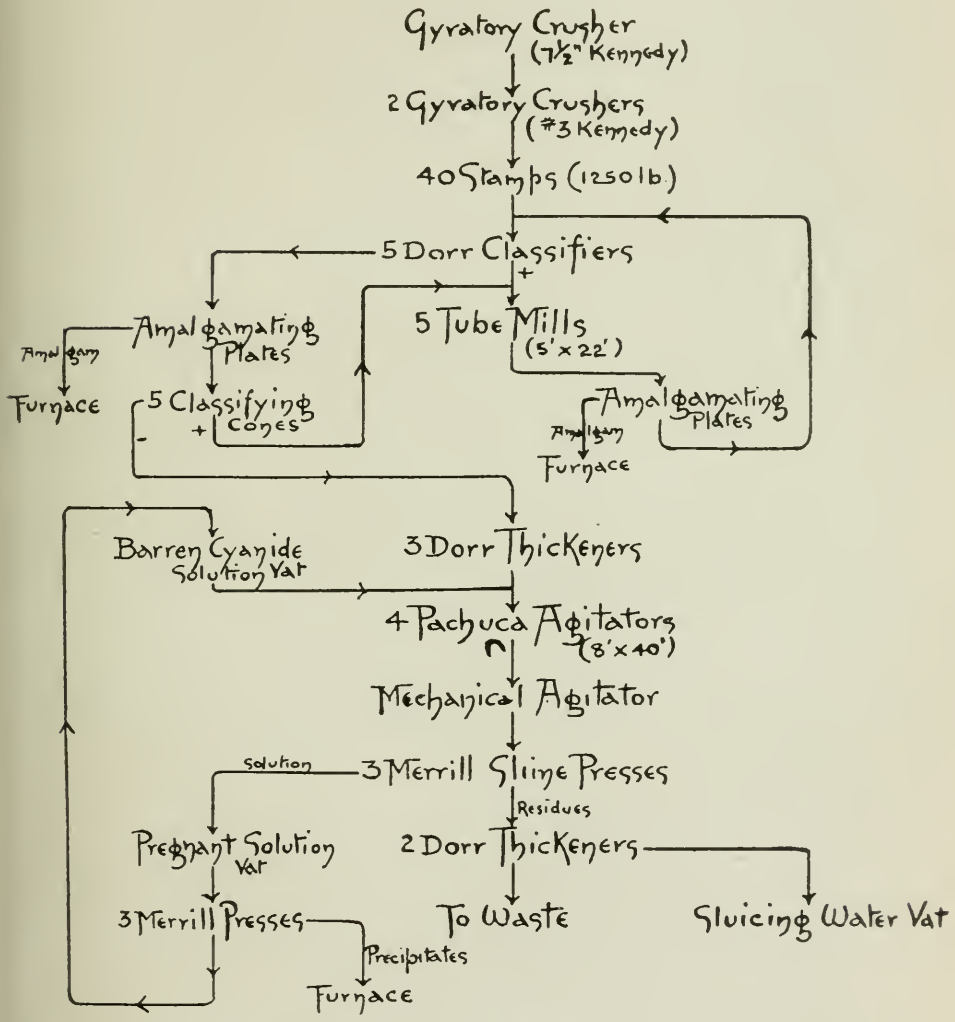
GOLD.

Porcupine.

The Porcupine District, in the face of many obstacles, is now making itself felt in the mineral output of Ontario as an important gold producer. During the first six months of the year labor troubles not only curtailed production but greatly impeded development work, but since the strike ended conditions have gradually improved and the year closes with conditions normal. This has been the first complete year in which the Porcupine mills operated and the result is shown in the increased output.

The gold production of the district is shown in the following table:

Year.	Ore treated.	Gold Bullion.	Value.
	(Tons.)	(Ozs.)	$
1910	1,060	1,947	35,539
1911	707	851	17,187
1912	.....	83,726	1,730,628
1913	.....	207,583	4,284,928
	.....	294,107	6,068,282



FLOW SHEET, DOME MILL.

The year 1913 thus shows an increase of $2,554,300 or 147 per cent. over 1912, and nearly equals the total previous production for the whole of Ontario ($4,734,713). The production of gold from Porcupine now forms 29 per cent. of the gold production of the Dominion and 95 per cent. of that of Ontario.

The outstanding feature of the year's operations was the expansion in the milling capacity of the district. Every producing mine has either recently enlarged its milling capacity or has enlargements of its mill under construction.

The principal producing mines are:—

1. Dome.
2. Hollinger and Acme.
3. McIntyre.
4. Porcupine Crown.

Dome:

Development consisted of 191 feet of shaft sinking attaining a depth of 434 feet, and 5,118 feet of crosscutting, drifting and raising combined. This work was almost entirely confined to the 3rd, 4th and 5th levels while the ore was supplied mostly from the second level from the opencut workings above.

The mill now treats from 12,000 to 13,000 tons per month, but with the 40 additional stamps now being installed it is expected to be able to double this tonnage by April, 1914, which will be 1,000 tons daily.

The average number of men employed was, underground 83, above ground 161, on construction 37. The average number of machines used during the year was, large drills 6.5, small drills 5.5, hammer drills 6.2.

The following statement covers the milling operations for the past two years. It must be borne in mind that in the year 1912 the plant was only in operation nine months.

Year.	Tonnage.	Gold.		Value recovered per Ton.
		Oz.	Value.	
			$	$
1912	75,088	35,515	739,618	9.85
1913	131,149	59,911	1,242,625	9.47

Hollinger:

Progress at the Hollinger mine continues to be of a most satisfactory nature. Not only has the mine regularly paid a 3 per cent. four-weekly dividend, but at the same time a large surplus has been accumulated and the year closes with more proven ore blocked out than at the beginning of the year.

The surplus carried forward is made up approximately of $510,000.00 of cash and quickly convertible assets and only $178,000.00 of capital assets.

The dividend record of the Company is as follows:—

1912	9%	$270,000 00
1913	39%	1,170,000 00
Total	48%	$1,440,000 00

General view of Hollinger Mine, showing Mill and Main Shaft House, Timmins, Porcupine District.

Development has proceeded on the 100, 200, 300 and 425 ft. levels, and the deepest working is 525 feet. This is in No. 7 winze which is down in ore 100 feet below the 425 ft. level on No. 1 vein. Development to January 1st, 1914 consisted of the following:

——	Drifts.	Crosscuts.	Winzes still in operation.	Shafts still in operation.	Diamond Drilling.
Surface					601
100-ft. level	4,131	1,884			1,372
200-ft. level	3,193	1,310			1,590
300-ft. level	1,530	398	130		461
425-ft. level	243	212	100		93
Totals	9,097	3,804	230	585	4,117

The following notes and statements have been taken from the third Annual Report of Mr. P. A. Robbins, general manager of the company, covering the calendar year 1913.

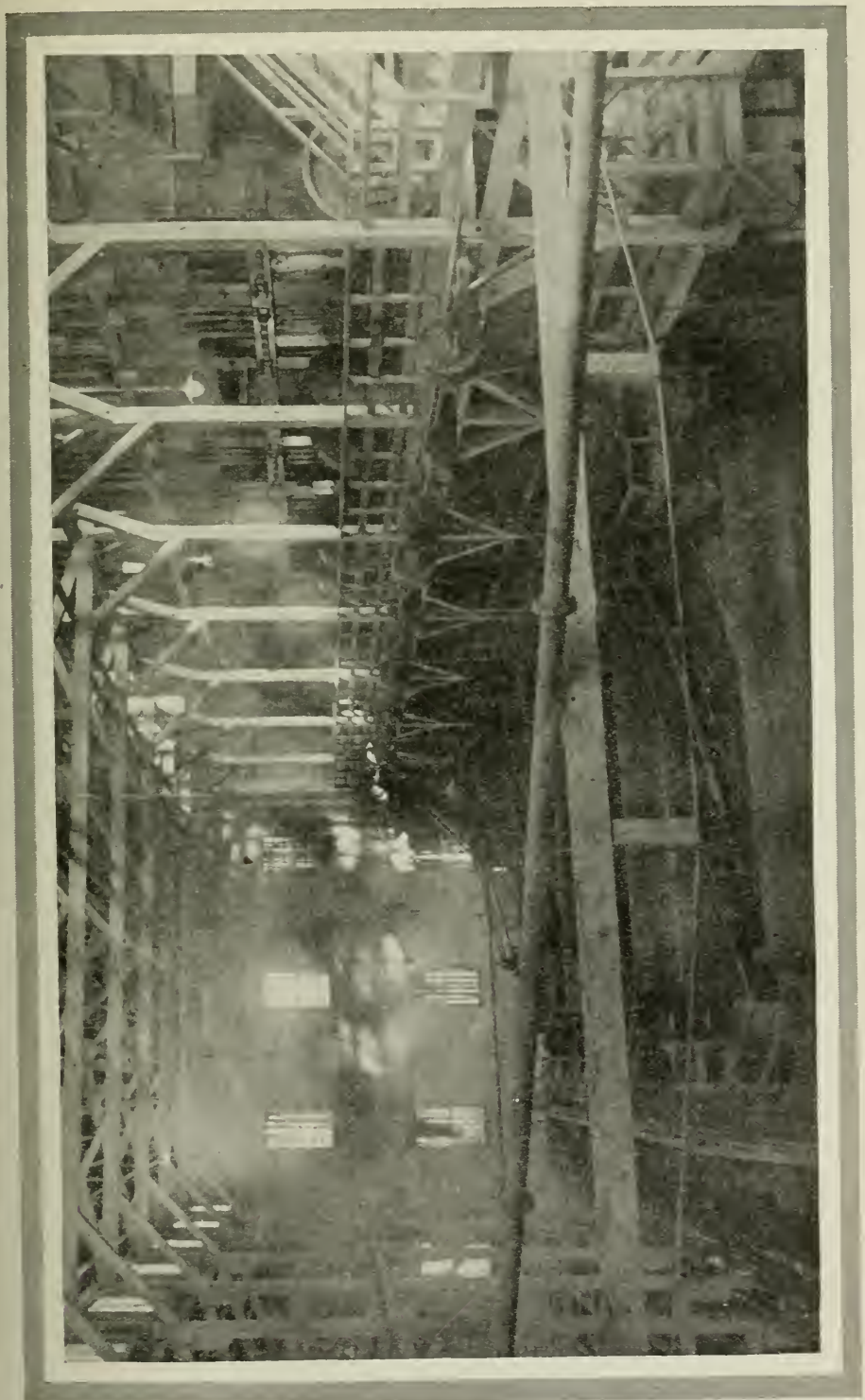
The ore hoisted from the mine during 1913 was drawn from the following sources:

Level.	No. 1 Vein.	No. 2 Vein.	No. 3 Vein.	No. 4 Vein.	No. 5 Vein.	Miscel.	No. 8 Vein.	No. 37 Vein.	No. 38 Vein.	Total tons.
Above 100 ft.	35,377	14,649	423	17,408	3,591	15	4,263	527	1,330	77,583
Above 200 ft.	20,942	7,431		11,213	241		752	256		40,835
Above 300 ft.	10,272	1,909		3,207				394		15,782
Above 425 ft.	3,127	33								3,160
Below 425 ft.	788									788
Totals	70,506	24,022	423	31,828	3,832	15	5,015	1,177	1,330	138,148

Approximately 27 per cent. of the ore hoisted from the mine came from development. Considering the small amount of development work accomplished during the first six months of the year, owing to the unsettled labor conditions this showing is most satisfactory.

RECAPITULATION OF ORE RESERVES.

——	Tons.	Value per ton.	Estimated Gross Value.	Estimated at beginning of 1913.
No. 1 Vein	284,200	$19 56	$5,559,900 00	$6,026,100 00
No. 2 Vein	208,400	10 22	2,129,500 00	2,648,250 00
No. 3 Vein	22,600	7 47	169,000 00	169,000 00
No. 4 Vein	121,100	11 55	1,398,800 00	1,012,000 00
No. 5 Vein	35,200	11 55	406,500 00	
No. 7 Vein	25,200	10 51	265,000 00	
No. 8 Vein	35,900	9 11	326,000 00	77,150 00
No. 37 Vein	32,800	12 22	400,900 00	400,900 00
No. 38 Vein	8,100	15 31	124,000 00	124,000 00
No. 41 Vein	2,200	15 09	33,200 00	33,200 00
No. 44 Vein	9,600	20 00	192,000 00	
Veins 9, 11, 12, 13, 14, 23, 33, 35, 36, 39, 42, 43	60,000	10 00	600,000 00	730,000 00
	845,300	$13 71	$11,604,800 00	$11,271,400 00



Hollinger Mill, showing Stamps and Tube Mills.

The average value of the reserves in No. 1 vein are this year estimated at $19.56 per ton, while last year they were estimated at $28.86 per ton.

This falling off in value is largely due to the fact that during the early part of the year we were engaged in a serious labor dispute, and in order to keep up the output of gold, it was necessary to draw ore from the richer parts of the mine, to compensate for the small tonnage being treated.

In consequence of this the ore in No. 1 vein above the 100 and 200 feet levels was robbed of some of the richer portions, and the balance of ore now left above those two levels naturally shows a smaller value than was the average value before the richer portions were removed. There has also been some falling off in the average value of the ore upon the 300 and 425 feet levels, as compared with the values encountered upon the surface and 100-feet levels, but by way of compensation for this, the average width of the ore upon the lower levels is greater than upon the upper levels.

Recently, by means of a diamond drill hole driven horizontally from the workings upon the 425-feet level, we have found two ore bodies, located to the east of No. 1 vein in unprospected territory.

The average grade of all ore in reserve shown at the beginning of the year was $17.48 per ton, while that shown by the present estimate is $13.71 per ton.

This falling off in average value is due principally to the fact that by far the greater part of the year's development work has been done upon veins of comparatively low values, thus bringing about a lowering of the over-all average in the mine.

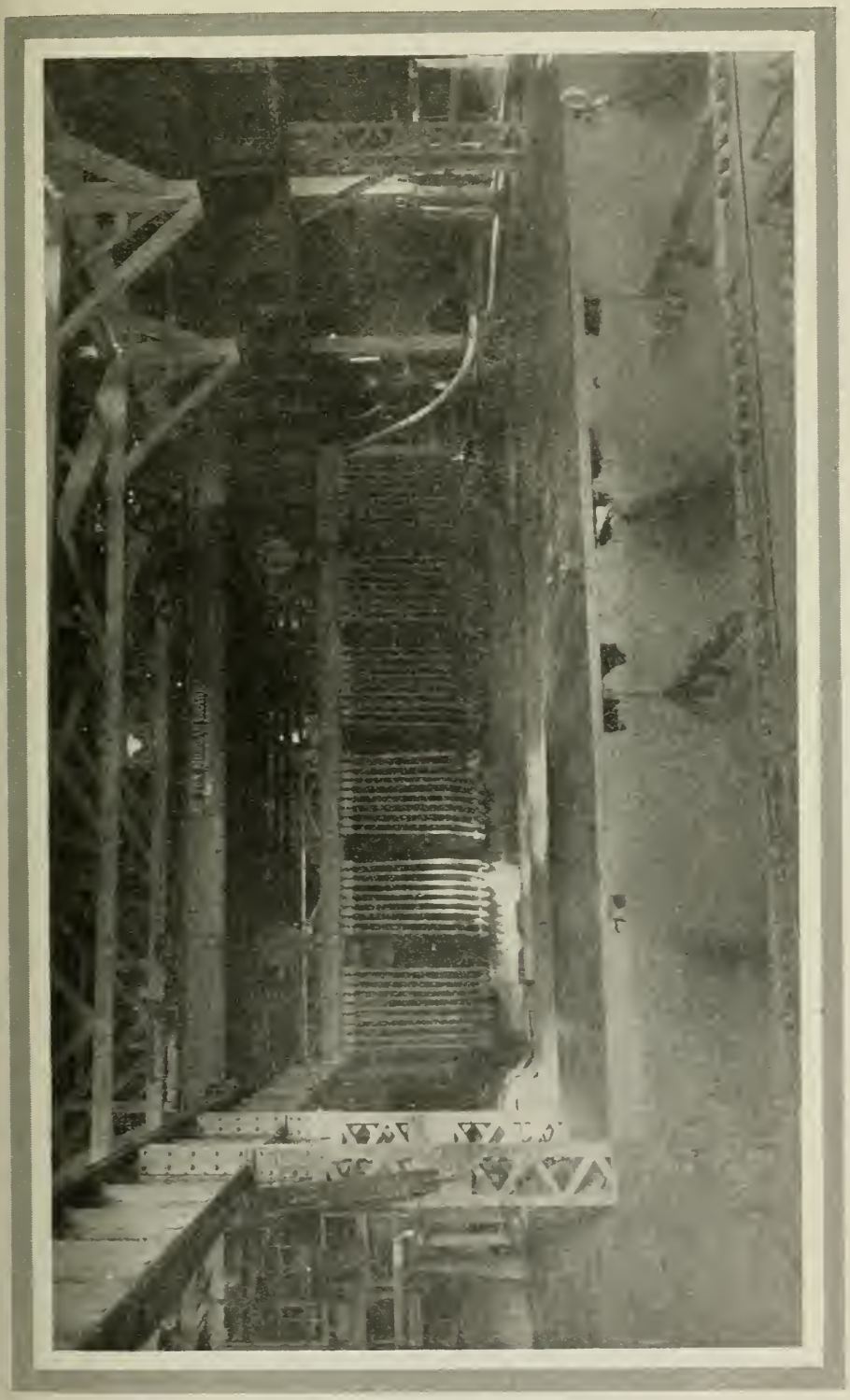
Based upon the hypothesis that the principal ore bodies will all persist to at least the depth of the deepest working an addition of 475,800 tons valued at $5,897,800 may be made to the estimates already given.

The milling record is as follows:

Year.	Tonnage.	Gold Value.	Value sent to mill per ton.	Value recovered per ton.
		$		$
1912	46,195	982,681	.....	21.27
1913	138,291	2,465,978	18.56	17.83
Total	184,486	3,448,659	.....	.....

For 1913:—

Average tons per day	383.92
Per cent. of possible time run	86.3%
Average tons per 24 hours of running time	444.87
Stamp duty tons per 24 hours of running time	11.51
Total values per ton in tailings	$0.723
Per cent. of total gold extracted	96.085%
Cyanide consumed per ton of ore	0.461 lb.
Lime consumed per ton of ore	2.422 lb.
Zinc consumed per ton of ore	0.663 lb.
Lead Acetate per ton of ore	0.0065 lb.
Tons of solution precipitated per ton of ore	3.164
Zinc added per ton of solution	0.209
Average value of pregnant solution	$5.612



Hollinger Mill, 500-ton Moore Filters Plant.

The capacity of the mill has been gradually raised from 300 to 500 tons per day. Extensions are now under construction which will further increase the capacity to 650 tons per 24 hrs.

The average working costs for the year were high, owing to the inefficiency of operations during the first part of the year.

General	$1.268
Mining	3.089
Milling	1.753
Total	$6.110

The last few periods show more nearly what may be anticipated in the way of working costs in the future, the average being approximately:

General	$0 90	per ton
Mining	2 87	"
Milling	1 44	"
Total	$5 21	

Underground operations will be cheapened by better arrangements for tramming and by hoisting with skips instead of cages.

Milling costs will be reduced as the tonnage treated increases, and general charges will show a decrease per ton when spread over a larger tonnage than at present.

All things considered it is probable that the total costs of production and treatment will be reduced to about $4.50 per ton. The reduction, however, will be gradual and can only follow upon increased output.

Acme:

The holdings of the Acme Gold Mines Limited consist of the claims formerly known as the Dixon claims, in the vicinity of Pearl Lake and adjoining the Hollinger holdings on the north east. The property belongs to the Canadian Mining and Finance Company, Limited, and though practically under the same management as the Hollinger mines is operated as a separate company.

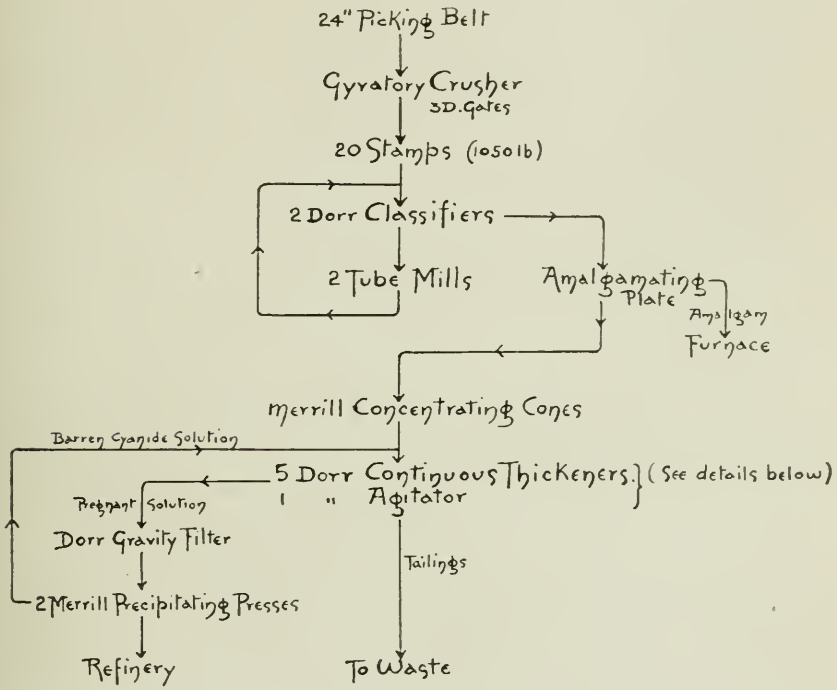
Development to the 1st January, 1914, consists of:

———	100-ft. Level.	200-ft. Level.	Totals.
Drifts	108	515	623
Crosscuts	366	613	979
Shafts	.....	.....	548
	.....	.....	2,150

The greatest depth attained is 300 feet. The ore taken out has been from development alone and was treated in the Hollinger mill.

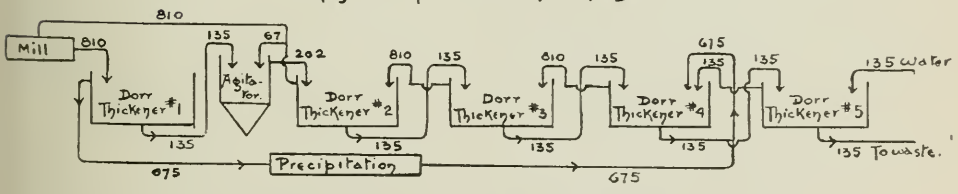
It amounted to:

Year.	Tonnage Milled.	Gold Value.	Value recovered per Ton.
1913	1,840	$22,044.17	$11.98



Details of Continuous Decantation

Figures refer to solution tonnages.



FLOW SHEET, PORCUPINE CROWN MILL.

No ore was milled previous to 1913.

The Millerton Gold Mines Limited which is another of the holdings of the Canadian Mining and Finance Company are the claims formerly known as the Miller-Middleton claims. No work was done on this property during 1913 but the work performed previously consisted of:

Shafts	363 ft.
Drifts	249 ft.
Crosscuts	396 ft.
Total	1,008 ft.

McIntyre:

The new cyanide mill of the McIntyre Company started operations early in March, but was closed down some time on account of the strike. It is now operating at full capacity and with the additions and alterations recently made both efficiency and capacity have been increased.

Porcupine Crown:

Crosscutting is proceeding on the 500-foot level (the deepest level in the mine) to locate the vein. Development during the year has extended the known boundaries of the ore bodies on all the levels above. The length of the ore shoots as now known and the amount of stoping done on each are shown below:

100-foot level,	465 feet	23,261	cub. ft.
200- "	570 "	55,925	"
300- "	613 "	50,936	"
400- "	218 "	12,520	"
		142,642	

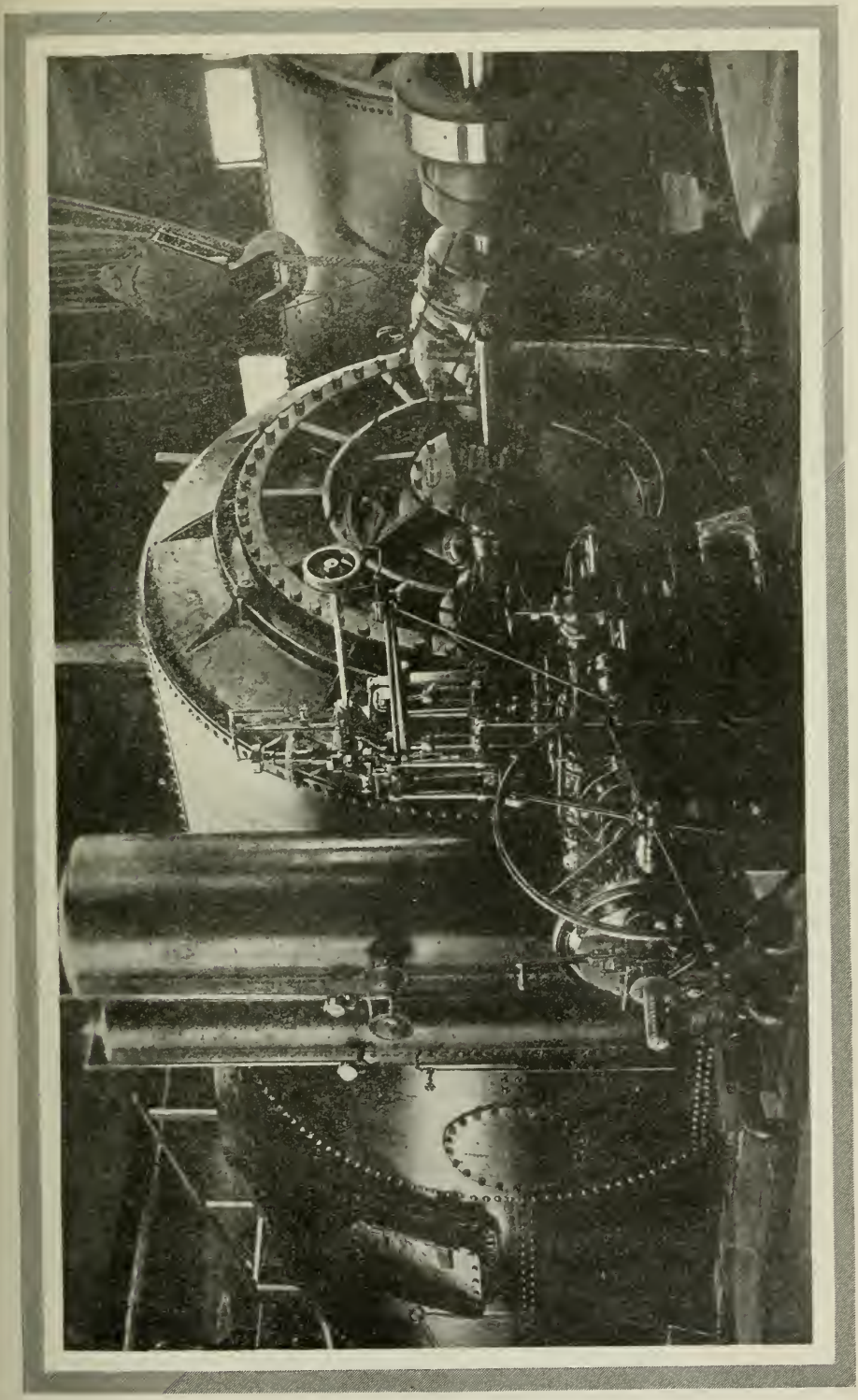
The new cyanide mill with the addition of a second 10-stamp unit has been put into successful operation and is now treating 125 tons daily. Continuous decantation after agitation, doing away with the use of filters is a feature of this mill.

Year.	Tonnage Milled.	Gold.		Value recovered per ton.
		Oz.	Value.	
1913	19,714	18,284	$347,623	$17 63

No milling took place previous to 1913. The announcement has been made that this property will pay regular quarterly dividends of 3 per cent. beginning April, 1914.

Dome Lake:

A majority of the stock of the Dome Lake Mining and Milling Company has been acquired by the Hudson Bay Mines Limited of Cobalt, and the prospecting and development of the property is now proceeding under the direction of the same management as the latter company.



Wawaiten Falls Power Development. Two Morgan Smith 3,300 h.p. Water Wheels, with Lombard Governors.

4. Wawaiten Falls Power Development. View of Dam from Lake Kenogamisse.
5. Wawaiten Falls Power Development. Canal which carries water to 12-foot iron pipe, showing intake in distance.

The ore encountered in development was treated in the company's 10-stamp mill. The milling record for the three months in 1913 in which the mill operated was:

Tonnage milled	3,717 tons	
Bullion produced		$19,762 14
Concentrates (estimated)	73 tons	$5,607 36

The flow sheet is: Jaw crusher to battery bin, challenge feeder to ten 1,050 lb. stamps fitted with 10 mesh screens, amalgamating plates, Dorr classifier, slime to second amalgamating plate, sand to tube-mill (5 x 18) and return to Dorr classifier, slime from plate to classifier and then over slime tables to waste.

Mr. A. H. Brown, who is now general manager of the company, states in a recent report:

"My examination shows two ore shoots on the 180-foot level, one 60 ft. long of an average width of 23½ in., assaying $18.80 per ton.

"A total of 4,645 feet of work has been done of which only 926 feet was in ore.

"The installation of a picking table will reduce waste rock in the ore coming from the mine, and so increase the value of the ore milled.

"Operating on the basis of fifty tons a day of twenty-four hours would be as much as the present ore shoot would warrant."

Several other properties in the Porcupine District have installed small mills, but these can only be considered as test mills until proven ore bodies can furnish a steady supply. A leasing company has reopened the Rea Mine, after a long close down, and now shows a small production for the year from the company's 5-stamp mill.

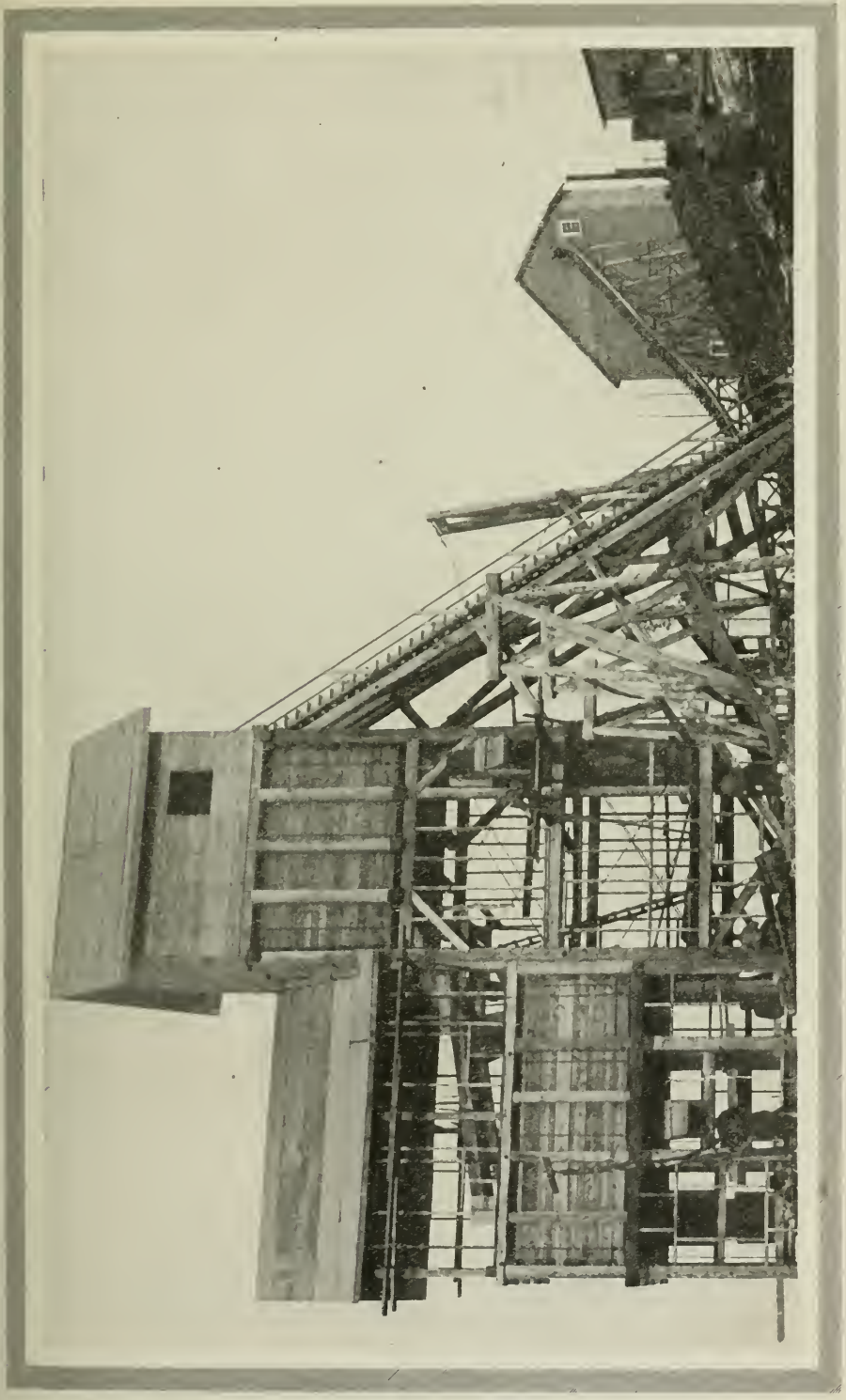
Power:

The Northern Canada Power Company, Limited, operates two hydro-electric plants on the Mattagami River, namely Wawaiten Falls, 12 miles south-west, and Sandy Falls, six miles north-west from the town of Timmins, Ontario. It is from these two plants that the mines of Porcupine derive their power.

Wawaiten Falls plant is located in the Township of Thornloe at the foot of Lake Kenogamisee. A concrete dam 1,000 feet long at this point, diverts he water into a 1,200 ft. canal. From intake at foot of canal, water is carried by 1,500 feet of 12′ iron pipe to a 40′ diameter surge tank on top of the hill overlooking the power house. Two 8′ iron pipes, 1,300 feet long, lead from this surge tank down the side of hill direct to the wheels in the power house. The power house is of re-inforced concrete and contains two 3,300 h.p. Morgan Smith water wheels under head of 125 ft., direct connected to two 2,500 k.v.a., 3 phase, 12,000 volt Canadian Westinghouse alternators; two 70 k.w. exciter sets driven by independent water wheels and Westinghouse switching and switchboard apparatus. During the summer and autumn of 1913, the Power Company installed 1,500 feet of 9′ wood stave pipe line from intake of canal to surge tank, duplicating the present 12′ iron pipe. Material for this line is 2″ Oregon fir, and was installed under the supervision of the Pacific Coast Pipe Company's engineer.

Sandy Falls plant is located in the Township of Mountjoy. A timber dam of approximately 1,500 feet in length diverts the water into a wooden flume 14′ by 16′ by 700′. Water from the flume is taken direct to the wheels in the power house by means of short lengths of 10′ pipe. The power house is of timber construction covered with asbestos and corrugated iron, and contains two 1,200 h.p.

6. Wawaiten Falls Power Development. 9-ft. wood stave pipe line, 1,550 ft. long, duplicating present 12-ft. iron pipe from intake to surge tank.
9. Sandy Falls Power Development. Steel pipe (under construction), old flume and power house.
7. Wawawiten Falls Power Development. Two 8-ft. iron pipes, 1,300 ft. long, from surge tank to power house. Note surge tank in the distance.



Tough-Oakes Mine, Kirkland Lake District. Shaft Head-Frame and Rock House, with Tramway leading to Mill.

Morgan-Smith wheels under a head of 33 feet direct connected to two 950 k.v.a., 3 phase 12,000 volt, Canadian Westinghouse alternators with exciters on the same shaft. Switching and switchboard apparatus is of Candin Westinghouse manufacture. During the summer of 1913, the Power Company commenced extensive improvements at this plant. The timber dam is being replaced with a concrete dam and wooden flume with steel pipes. It is expected this work will be completed during the summer of 1914. The transmission lines consist of two complete circuits on a single pole line from each plant, and are so built and connected that plants are operated in parallel. Power is supplied to consumers at approximately 12,000 volts, 3 phase, 25 cycle.

The Power Company has 35 miles of main and branch transmission lines now operating in the district.

Kirkland Lake (Swastika).

This district is situated about six miles east of Swastika Station and sixty miles north of Cobalt. The finding of exceptionally high gold values in some of the quartz veins directed attention to this section of the country at a time when interest in prospecting new areas was declining.

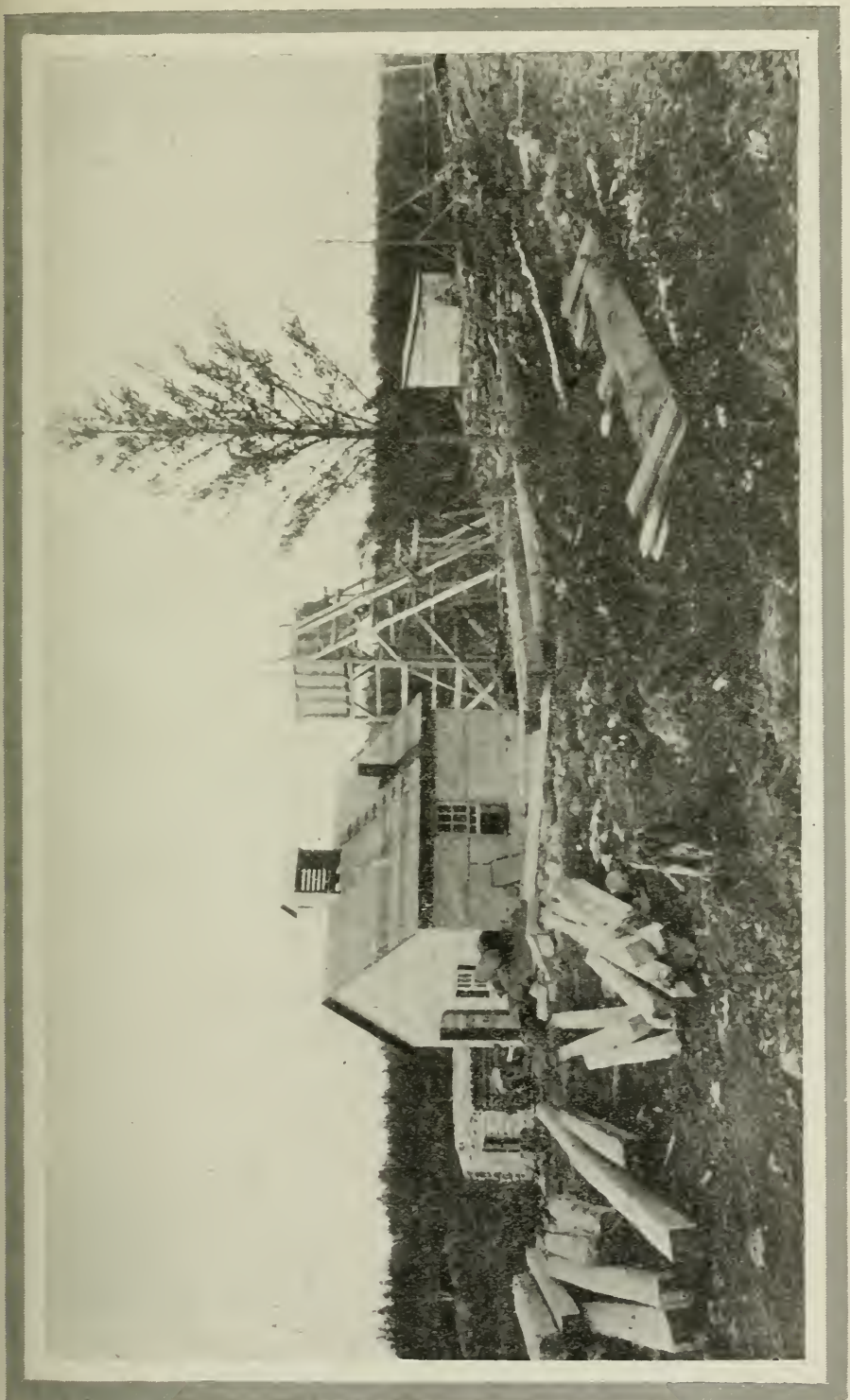
A number of companies have installed small plants and started development, but the only producing property at the end of 1913 is the Tough-Oakes. The *Tough-Oakes* veins are narrow, but the little development done on the property has yielded remarkable results. The high grade vein material is hand-picked, sacked and shipped to the smelters.

A five-stamp mill is treating daily by simple amalgamation 12 tons of milling ore making an average saving of $14.00 per ton. The tailings from this little mill are being impounded for future treatment as they still carry good values.

Shipments	Date	Tons	Gold oz. per ton	Silver oz. per ton	Value per ton	To Whom Shipped
A.....	8 Sept.,1912	1,892	17.451	.....	$349.03	American Smelting & Refining Co., Perth Amboy.
B.....	21 Dec., "	19,905	22.509	23.509	463.98	American Smelting & Refining Co., Perth Amboy.
C	19 Mar., 1913	20,527	19.688	33.665	412.67	Pennsylvania Smelting Co., Carnegie, Pa.
D.....	5 June, "	30,438	23.040	37.900	483.00	Balbach Smelting & Refining Co., Newark, New Jersey.
E.....	31 Oct., "	28,287	24.075	64.200	517.45	U. S. Metals Refining Co., Chrome, New Jersey.

The silver in the ore is sufficient to pay freight and smelter treatment charges. During 1913, this little mill treated 1,975 tons with a bullion production of

——	Fine Oz.	Value.
		$ c.
Gold	1,272.446	26,232 31
Silver.....	198.23	116 56
Total.....	.....	26,348 87



Tough-Oakes Mine, Kirkland Lake District. Ore House and Head-Frame (under construction).

Tough-Oakes Mine, Kirkland Lake District. Power House and Mill.

The bullion was shipped to the Royal Mint, at Ottawa.

The first ore was taken from an open cut 65′ x 20′ x 7′. A shaft was sunk from this excavation and levels started at 100 and 200 feet. On the first January, 1914, the shaft had reached a depth of 208 feet and the drifting consisted of 247 feet on the 100′ level, and 146 feet on the 200′ level.

Mr. Charles O'Connell, manager of the Tough-Oakes Mine, writing on the 31st January, 1914, states in part:

"The shaft on the No. 2 vein is now down 218 feet, and at the 300-ft. level we will cut a station and start drifting. The vein in the bottom as at this date will average 13″ in width, and the average value is $426.00 per ton. The shaft started last week on the No. 3 vein is now down 12 feet, and the average width is 10½″, average value $256.00 per ton.

A contract has been entered into with K. Farah, of New Liskeard, Ontario, for the delivery of not less than 800 h.p. of electric power at the Tough-Oakes mine on May 1st, 1914.

The power plant at Charlton in the Township of Dack, is about 70 per cent. completed, and the transmission line which will be 26 miles in length is now being built. A 12 drill compressor will be installed at the Tough-Oakes mine, and be ready for operation on or before May 1st.

The Sylvanite Gold Mines, Limited, owning five claims adjoining the Tough-Oakes have been developing during the year, and have a shaft down 55 feet. This property as well as the Tough-Oakes is controlled by the Kirkland Lake Proprietary, of London, England.

The Burnside Gold Mines, Limited, will start operations some time about February 10th, under the same control. They also have an option on the control of the Teck-Hughes and some other groups."

Teck-Hughes Gold Mines:

On the 29th January, 1914, this company had completed the following development work.

No. 1 shaft, sunk on a promising vein, in the porphyry, close to the contact with the conglomerate, 120 feet deep, over 200 feet of drifting and cross-cutting completed at the 100-foot level.

No. 2 shaft, 48 feet deep, vein in the conglomerate, a few feet of cross-cutting completed.

No. 3 shaft, 80 feet deep, vein in the porphyry, drifting and cross-cutting at the 75-foot level, 155 feet of drifting and 50 feet of cross-cutting completed.

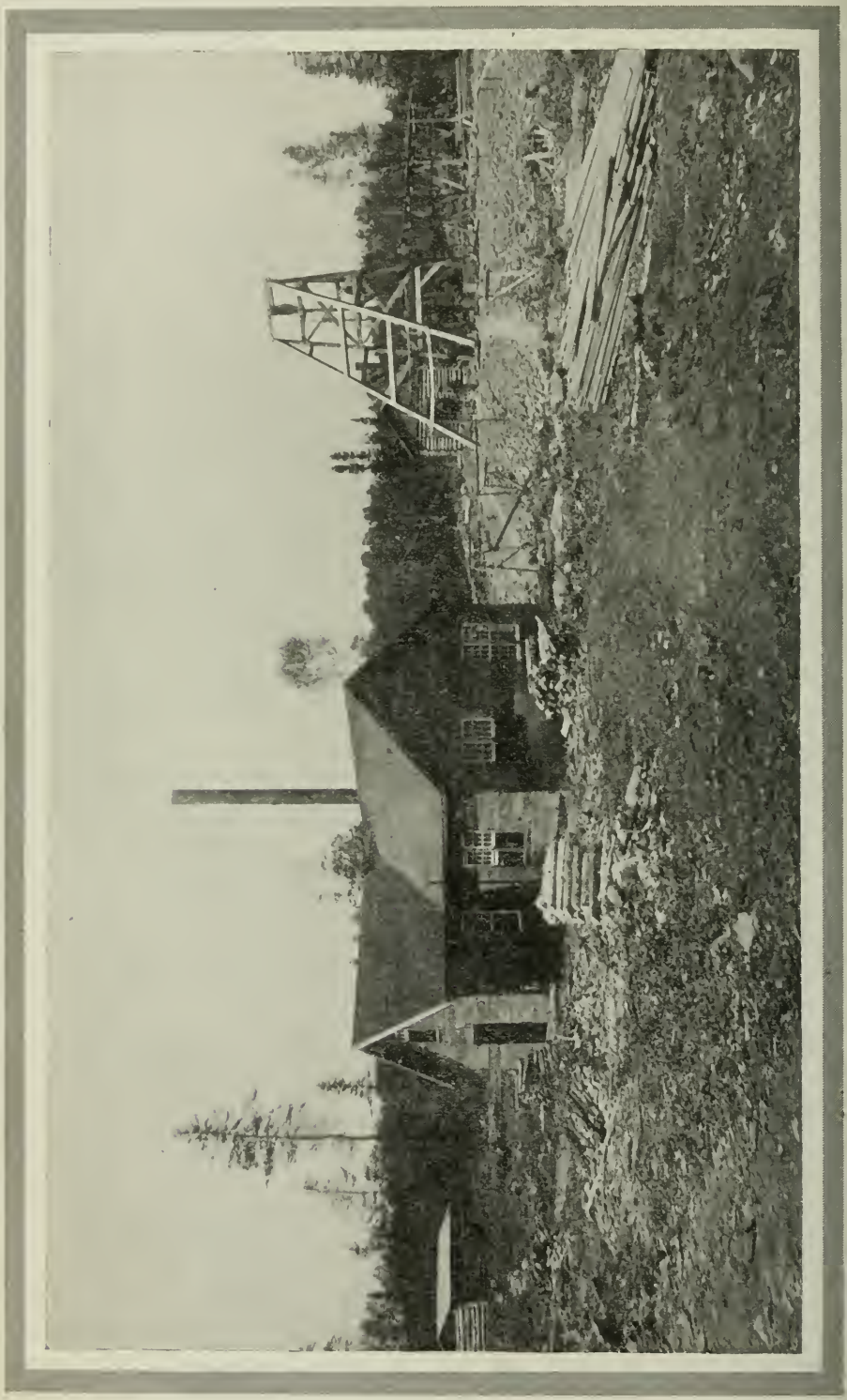
The summer of 1914 promises to be a busy one and the whole belt as far west as Kenogami will doubtless undergo a rigorous exploration.

The introduction of cheaper power will facilitate the shaft sinking and other development planned by the Tough-Oakes, Teck-Hughes, Oakes, Wright-Hargraves, Sylvanite, Telluride, Burnside and other properties.

An extension of the Kirkland Lake road is being built across Label and Gauthier Townships, and over this road a plant will be taken this winter for the Huronian Mine.

The 10-stamp mill of the *Swastika Mining Company* at Swastika was operated early in the year, giving a small production, but is now closed down.

The only mill that operated at all during the year in the Larder Lake district was that of *Goldfields, Limited.*



Teck-Hughes Claim, Kirkland Lake District, Power House and Shaft Head-Frame.

SILVER.

Cobalt:

The silver production from the Cobalt district for 1912, including in this the Gowganda and South Lorrain districts, amounted to 30,243,859 ounces, valued at $17,390,218. The 1913 production shows a decrease of about 561,884 ounces from the above figures, and with the average price of silver for the year one cent less, the value of the output is $16,555,001.

The leading producers were the Nipissing, Coniagas, La Rose, Cobalt Townsite, Crown Reserve, Kerr Lake, McKinley-Darragh-Savage, Buffalo and Cobalt Lake. Seneca Superior and Casey Cobalt showed large increases and both joined the list of dividend payers during the year.

The draining operations at Kerr Lake were successfully carried on during the summer and autumn of the year, and some valuable veins found in the old bed of the lake.

Milling operations assumed larger proportions than ever before. The only new mill coming into operation within the year was the one erected north of the La Rose Mine by the Northern Customs Concentrators, Limited. The mill formerly owned and operated by this company was sold to English interests which also control the Townsite, Casey Cobalt, Cobalt Lake and City of Cobalt Mining Company, and will now treat the ore produced by these companies.

The world's production of silver during 1913 was 212,000,000 ounces, of which Cobalt is to be credited with 14 per cent.

TABLE I.

SILVER PRODUCTION FOR THE COBALT DISTRICT.

Year.	Value.
1904	$136,217 00
1905	1,485,570 00
1906	3,573,908 00
1907	6,155,391 00
1908	9,133,378 00
1909	12,456,301 00
1910	15,477,987 00
1911	15,953,895 00
1912	17,390,218 00
1913	16,555,001 00
	$98,317,866 00

A Weekly Shipment of Silver Bullion at Cobalt, 22nd April, 1913; 236 bars, containing 271,293 ozs. Troy, or 9.3 tons Av., and valued, $162,446.45.

TABLE II.

Ore Shipments from Cobalt Silver District for Calendar Year 1913.

Mine.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Totals.
Alladin (Silver Queen)	.....	60.84	29.75	52.95	26.35	.....	.....	.....	.....	32.09	.....	.....	201.98
Bailey	21.18	.....	89.17	.....	20.00	.....	.....	.....	20.00	.....	.....	.....	150.35
Beaver	26.04	52.06	21.65	36.23	31.25	27.19	43.02	.....	.....	.....	54.77	.....	292.21
Buffalo	.....	.....	.....	.....	32.95	33.18	.....	.....	.....	.....	.....	.....	66.13
Casey Cobalt	59.32	30.25	51.00	20.25	30.50	67.57	.....	45.00	.....	25.86	.....	71.79	401.54
Chambers Ferland	63.20	32.00	64.00	.....	.....	64.58	.....	.....	.....	.....	.....	.....	223.78
City of Cobalt	32.94	.....	.....	34.50	37.70	.....	.....	.....	.....	.....	.....	.....	105.14
Cobalt Townsite	210.68	147.50	183.90	198.72	239.30	161.75	244.84	280.15	126.36	112.35	653.75	203.24	2,762.54
Cobalt Lake	64.27	104.05	64.54	64.40	92.11	126.49	94.97	157.02	127.68	63.73	83.26	153.17	1,196.33
Coniagas	131.16	152.45	127.60	127.12	253.52	71.32	78.23	168.56	205.68	80.93	128.75	95.08	1,620.40
Colonial	.....	21.56	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21.56
Crown Reserve	74.96	70.92	105.03	70.24	92.11	69.43	68.72	67.03	50.92	.....	49.80	71.99	791.15
Drummond (Caribou Cobalt)	62.60	65.23	61.56	32.05	80.41	.....	107.83	.....	43.04	56.70	37.56	63.08	610.06
Green-Meehan	12.96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12.96
Hudson Bay	62.05	63.30	32.30	42.57	62.66	73.59	33.35	71.44	124.62	43.26	.....	.....	609.14
Kerr Lake	104.94	71.54	132.41	67.15	84.51	67.86	48.84	35.31	133.22	95.32	54.45	37.80	933.35
La Rose	274.44	246.83	259.03	224.94	195.67	183.96	183.96	146.31	171.08	294.17	516.66	515.53	3,275.14
Lost and Found (General)	.....	8.80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.80
Lumsden	.....	.....	.....	.....	.....	.....	.....	.....	.....	20 00	.....	.....	20.00
McKinley-Darragh	155.87	265.48	160.80	205.64	227.41	252.92	252.92	290.28	292.57	293.12	209.36	284.55	2,865.66
Nipissing	57.29	82.67	360.21	177.50	126.75	202.57	125.81	127.98	128.97	131.42	121.63	307 42	1,950 22
O'Brien	53.69	31.08	32.65	39.33	32.47	74.01	64.44	43.54	74.14	119.55	42.97	95.56	703.43
Orion (Silver Cliff)	.....	.....	.....	.....	.....	20.00	28.05	.....	.....	.....	.....	.....	48.05
Penn Canadian	.....	.....	.....	30.71	25.45	29.72	40.26	.....	27.93	.....	145.32	32.79	332.18
Peterson Lake (Leases):													
Gould	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.00	9.00
Seneca Superior	42.15	73.82	71.13	31.98	30.36	.....	29.83	31.25	29.64	34.64	39.66	43.50	457.93
Right of Way	.....	.....	31.64	31.07	.....	.....	.....	.....	.....	.....	40.26	43.15	146.12
Silver Bar	.....	.....	.....	20.00	.....	.....	.....	.....	.....	.....	.....	.....	20.00
Temiskaming	93.70	73.14	59.92	41.86	30.15	31.21	.....	30.67	.....	.....	43.61	.....	406.26
Trethewey	54.39	62.54	41.80	52.55	66.98	54.67	49.70	46.04	47.71	20.00	46.67	44.49	587 54
York Ontario (King Edward)	.....	.....	.....	.....	20.00	.....	.....	45.72	.....	.....	.....	21.49	87.21
Totals	1,656.83	1,718.06	1,980.09	1,601.76	1,839.50	1,649.07	1,494.77	1,586.30	1,603.56	1,423.11	2,268.48	2,093.73	20,916 16

TABLE III.

ORE SHIPMENTS FROM THE COBALT DISTRICT FOR THE YEARS 1904-1913.

(In tons of 2,000 lb.)

Mine.	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	Totals.
1. Badger								27.10			27.10
2. Bailey			30.00		88.80	36.85		20.00	41.57	150.35	367.57
3. Beaver						51.38	140.06	790.81	402.97	292.21	1,677.43
4. Buffalo		200.80	992.80	1,241.54	536.90	648.86	1,185.77	1,275.19	1,251.64	66.13	7,399.63
5. Casey Cobalt					10.00	8.50	48.40	277.74	214.34	401.54	960.52
6. Chambers Ferland					223.89	517.88	885.92	622.85	501.29	223.78	2,975.61
7. City of Cobalt				50.61	761.04	566.82	329.40	281.30	230.00	105.14	2,524.31
8. Cobalt Lake					225.97	95.47	296.80	2,111.32	1,085.22	1,196.33	5,011.11
9. Cobalt Townsite				143.22	177.71	27.35	310.99	703.51	1,944.77	2,762.54	6,070.09
10. Colonial			15.00	40.38			178.60	114.10	86.48	21.56	456 12
11. Coniagas		30.60	422.02	2,447.37	610.25	806.93	1,261.46	1,813.89	2,119.87	1,620.40	11,132.79
12. Crown Reserve					657.35	3,167.52	2,184.25	977.32	561.65	791.15	8,969.24
13. Drummond	.50	32.15	274.70	104.13	1,161.38	1,225.47	2,194.41	714.83	458.85	610.06	6,776.48
14. Foster		83.85	117.00	312.13	191.20	113.90					818.08
15. Green-Meehan			37.03	98.39				102.98		12.96	251.36
16. Hargrave		28.45					343.68	102.44	17.35		491.92
17. Hudson Bay				149.53	1,094.23	743 64	260.33	898.88	694.55	609.14	4,450.30
18. Imperial Cobalt				14.61							14.61
19. Kerr Lake		54.95	158.35	319.76	660.24	1,173.42	5,088.78	1,292.58	788.10	933.35	10,469.53
20. King Edward		19.00		31.12	338.19	146.58	134.12	20.00		87.21	776.22
21. La Rose	60.05	607.86	854.61	2,815.45	4,843.17	6,757.21	5,131.53	3,581.54	3,511.40	3,275.14	31,437.96
22. Lawson		14.61		61.12							75.73
23. Lost and Found									65.20	8.80	74.00
24. Lumsden										20.00	20.00
25. McKinley-Darragh	20.00	447.09	80.45	742.42	1,808.39	1,056.49	2,393.39	3,238.64	2,673.40	2,865.66	15,325.93
26. Nancy Helen				30.10	201.32	116.32					347.74
27. Nipissing	57.00	486.02	2,125.08	2,538.26	3,571.96	6,470.52	6,833.81	2,952.20	1,869.27	1,950.22	28,854.34
28. Nova Scotia			43.95	272.21	237.95	224.79					778.90
29. North Cobalt						6.87		3.00			9.87
30. O'Brien		26.32	114.18	1,491.61	3,459.51	1,419.11	608.57	628.44	711.43	703.43	9.162 60
31. Penn Canadian				77.33	187.99	339.01	285.62	22.40	126.35	332.18	1.370 88
32. Peterson Lake (Leases)											
Gould										9.00	9.00
Little Nipissing					40.67	39.62	313.76	28.45			422.50
Nova Scotia						121.15					121.15
Seneca Superior									432.97	457.93	890.90

33. Provincial					75.84		52.05	100.54	22.22		250.65
34. Princess				3.93							3.93
35. Red Rock				45.71							45.71
36. Right of Way			46.25	129.37	750.04	1,608.99	981.41	666.06	243.24	146.12	4,571.48
37. Rochester							28.30				28.30
38. Silver Bar					.58			2.72		20.00	23.30
39. Silver Cliff					160.44	149.06	156.84	92.30		48.05	606.69
40. Silver Leaf		9.00		46.36	197.03						252.39
41. Silver Queen		44.73	130.94	478.57	885.70	316.64			31.25	201.98	2,089.81
42. Temiskaming				204.32	795.20	852.14	1,119.12	855.60	967.31	406.26	5,199,95
43. Temiskaming Cobalt			20.47	67.98							88.45
44. Trethewey	21.00	218.58	198.48	833.58	1,408.69	1,134.50	536.64	602.98	579.10	587.54	6,121.09
45. University		16.00	55.28	60.23							231.51
46. Victoria					.47						.47
47. Violet		16.00	20.00								36.00
48. Waldman							38.81				38.81
49. Wyandoh							24.15				24.15
Totals	158.55	2,336.01	5,836.59	14,851.34	25,362.10	29,942.99	33,976.97	24,921.71	21,631.79	20,916.16	179,934.21

TABLE IV.

TABLE SHOWING SHIPMENTS FROM ELK LAKE AND GOWGANDA DURING YEARS 1909, 1910, 1911, 1912 and 1913.

(In tons of 2,000 lb.)

Mine	1909	1910	1911	1912	1913	Totals
Elk Lake.	tons	tons	tons	tons	tons	tons
Hitchcock	.....	.....	4.00	.....	.....	4.00
Lucky Godfrey	.....	17.00	.....	.....	.....	17.00
Moose Horn	.....	3.00	.....	.....	.....	3.00
Gowganda.						
Bartlett	2.00	.....	6.75	.....	.....	8.75
Bonsall	.....	6.78	.....	.....	.....	6.78
Boyd-Gordon	.....	30.00	1.25	.....	.....	31.25
Burke Remey	.....	2.00	.....	.....	.....	2.00
Calcite Lake	.....	.....	.....	8.50	.....	8.50
Canadian Gowganda	.....	.....	.....	8.00	.....	8.00
Everett	.....	8.35	.....	.....	.....	8.35
Mann	.....	.....	.....	16.00	20.00	36.00
Millerett	.....	346.30	128.00	188.00	.....	662.30
Miller Lake O'Brien	.....	31.00	116.50	112.60	172.90	433.00
Powerful	.....	.....	1.00	.....	.....	1.00
Reeves-Dobie	.....	61.00	5.00	.....	.....	66.00
Welsh	.....	1.25	.....	.....	.....	1.25
Totals	2.00	506.68	262.50	333.10	192.90	1,297.18

TABLE V.

STATEMENT SHOWING ORE SHIPMENTS FROM SOUTH LORRAIN.

(In tons of 2,000 lb.)

Mine	1908	1909	1910	1911	1912	1913	Totals
Wettlaufer	.....	111.50	226.64	496.00	478.00	120.00	1,433.14
Keeley	43.25	1.09	.....	21.26	.....	.....	65.06
Bellellen	.....	.....	.....	13.25	.....	.....	13.25
Total	43.25	112.59	226.64	530.51	478.00	120.00	1,510.99

TABLE VI.

STATEMENT SHOWING SHIPMENTS FROM COBALT DISTRICT, INCLUDING GOWGANDA, ELK LAKE AND SOUTH LORRAIN.

(In tons of 2,000 lb.)

Years.	Cobalt.	Gowganda.	Elk Lake.	S. Lorrain.	Totals.
1904	158.55	.....	.....	.....	158.55
1905	2,336.01	.....	.....	.....	2,336.01
1906	5,836.59	.....	.....	.....	5,836.59
1907	14,851.34	.....	.....	.....	14,851.34
1908	25,362.10	.....	.....	43.25	25,405.35
1909	29,942.99	2.00	.....	112.59	30,057.58
1910	33,976.97	486.68	20.00	226.64	34,710.29
1911	24,921.71	267.00	4.00	530.51	25,733.22
1912	21,631.79	324.60	.....	478.00	22,434.39
1913	20,916.16	192.90	.....	120,00	21,229.06
Totals	179,934.21	1,273.18	24.00	1,510.99	182,742.38

TABLE VII.

BULLION SHIPMENTS FROM THE COBALT DISTRICT, CALENDAR YEAR 1913.

Mine.	Weight, Ozs.	Value.
1. Bailey	4,350	$2,588.67
2. Beaver	4,324	2,586.35
3. Buffalo	1,688,763	997,920.27
4. Casey Cobalt	2,935	1,755.13
5. Cobalt Lake	4,391	2,625.72
6. Cobalt Townsite	47,998	28,702.80
7. Crown Reserve	637,782	384,700.52
8. Dominion Reduction	549,785	328,771.43
9. Drummond (Caribou Cobalt)	7,947	4,746.72
10. Hargrave	1,847	1,084.87
11. Kerr Lake	54,963	32,867.87
12. Lumsden	1,863	1,157.78
13. McKinley-Darragh	18,880	11,290.24
14. Nipissing	6,530,379	3,905,166.64
15. O'Brien	225,236	134,691.13
16. Penn Canadian	30,673	18,342.45
17. Preston East Dome (Silver Barr)	3,826	2,107.28
18. Temiskaming	23,604	14,115.19
19. Trethewey	10,274	6,085.52
20. Wettlaufer	23,650	14,142.70
Total	9,873,480	$5,895,449.28
Total for 1910	945,703	501,815.33
Total for 1911	3,772,920	2,012,428.95
Total for 1912	5,449,732	3,338,106.03
Total for 1913	9,873,480	5,895,449.28
Grand Total	20,041,835	$11,747,799.59

TABLE VIII.

MONTHLY AVERAGE PRICE OF SILVER.
(New York Quotations, cents per ounce troy, fine silver.)

Month.	1911	1912	1913
January	53.795	56.260	62.938
February	52.222	59.043	61.642
March	52.745	58.375	57.870
April	53.325	59.207	59.490
May	53.308	60.880	60.361
June	53.043	61.290	58.990
July	52.630	60.654	58.721
August	52.171	61.606	59.293
September	52.440	63.078	60.640
October	53.340	63.471	60.793
November	55.719	62.792	58.995
December	54.905	63.365	57.760
Year	53.304	60.835	59.791

A great speculation in silver has dominated the silver market for over two years. In November, the burden of carrying the large stocks of silver necessary to the success of the speculative movement proved too heavy, with the result that the Indian Specie Bank of Bombay, the mainstay of the movement, failed. The immediate result on the market was a break in price, the lowest point for the

year being reached in New York on December 1st, when it was 56⅛ cents. A strong syndicate took over the surplus stocks and this steadied the market and prevented a still further drop in price.

The uncertainty of an early settlement of conditions in China has also depressed the market, and the year closes with the likelihood that the present low prices will last for several months at least.

Elk Lake:

The property which is mostly looked to, to show the possibility of this district, is the Beaver Auxiliary, formerly known as the Donaldson Claim.

At this property a steam plant has been installed, including:

2—90 h.p. Boilers.
1—8 Drill Compressor.
1—6x8 Hoist.

Coal has been brought in over the railway to run this plant.

The main shaft was sunk to the 200 foot level, and early in August development on this level commenced and now there is completed 480 feet of drifting and cross-cutting. The ore encountered warrants further vigorous development.

At the Downey property, east of Silver Lake, 250 sacks of high grade ore were taken from an open-cut about 30 feet long. A shaft will now be sunk for further prospecting.

Gowganda:

At the *Mann Mines* only development work was carried on during the year. The shaft is to be continued to the 200-foot level before any further stoping is done. About 20 tons of rich ore is on hand awaiting shipment.

The *Miller Lake O'Brien Mine* is putting in a hydro-electric power development in order to cut down working costs. The plant is situated in the Townsite of Gowganda, between Gowganda and Burke Lakes. The natural fall is about 27 feet, but this is developed to give 30 feet. An 800 h.p. generator is installed, and about 500 h.p. is the power expected to be generated regularly. The length of transmission line is 2¼ miles and the voltage 4,000.

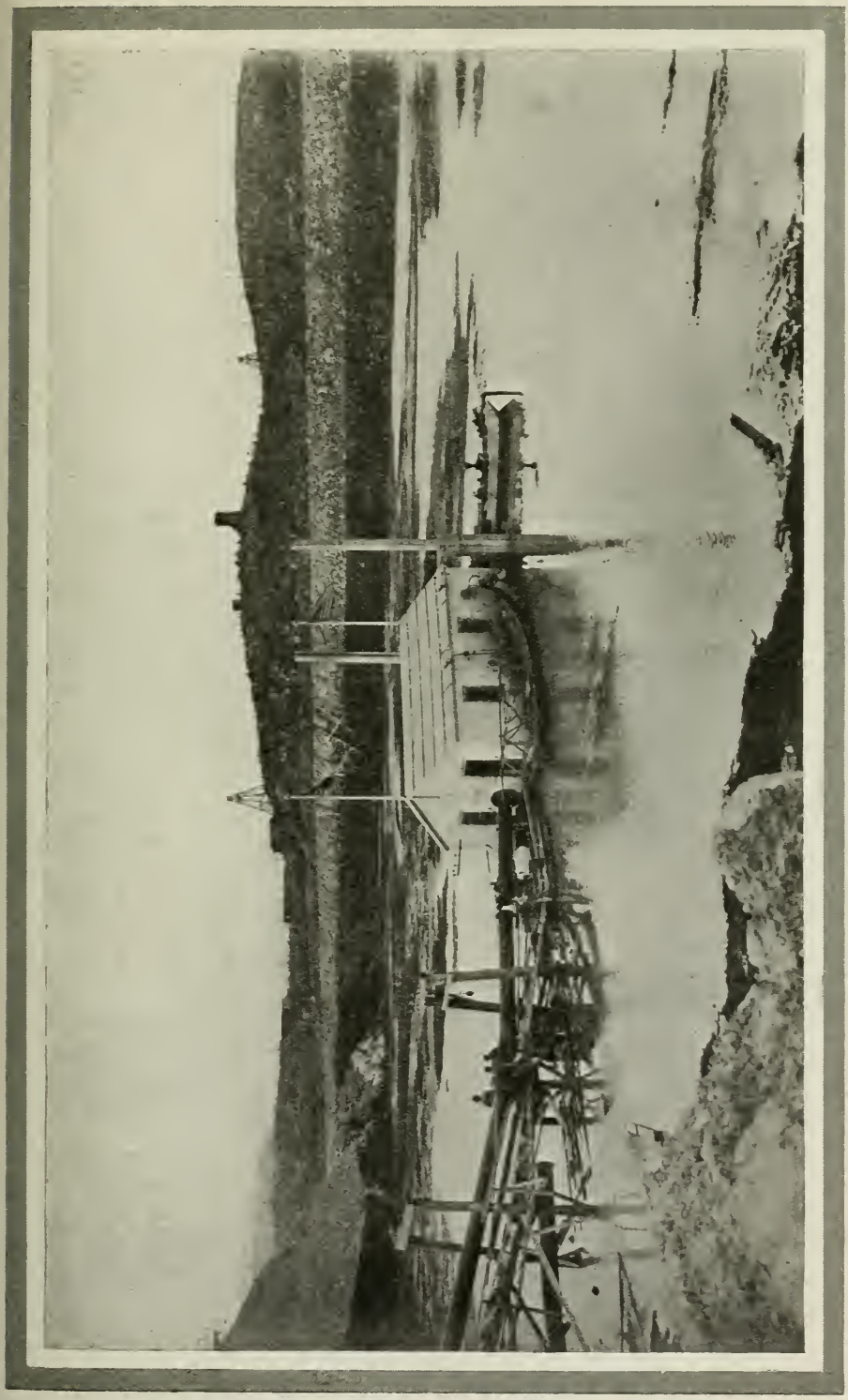
At the mine the main shaft is down over 400 feet and the next level to be opened will be at 450 feet.

The underground developments for the year have been of a very satisfactory nature.

The reduction mill on the Millerett property, now belonging to the Miller Lake-O'Brien ran from May to October treating:—

——	Tons treated.	Concentrates made. Tons.	Concentration Ratio.	Silver Recovery. Oz.
Miller Lake O'Brien	3,028	59.1	54—1	144,457
Mann Mines.....	244	9.4	26—1	.....

Surface prospecting on the Millerett has disclosed some very promising veins in the diabase.



Draining of Kerr Lake. Pump Barge and Discharge Pipe. Note line of original water level, line of new water level after lake discharge was lowered 6½ feet, line of top of mud, and water level on 1st August, 1913, 40 feet below original water level.

South Lorrain:

In this district the only shipper for 1913 was the *Wettlaufer*. Shipments were taken down Lake Timiskaming by boat and forwarded by Canadian Pacific Railway to the smelters.

The *Keeley* was re-opened by a new company and several promising ore bodies located.

Prospecting:

An interesting feature of development operations in the Cobalt district has been the draining of Kerr Lake in order to make available the ore in the immediate lake bottom and also to allow prospecting under the lake to be carried on with greater safety.

Permission has now been granted to the Cobalt Lake Mining Company to drain Cobalt Lake. The management hopes to have this draining completed by the end of October, 1914. Specifications for the pumps and plans for the dam across the outlet of Short Lake are already prepared. The bed of the creek into which Cobalt Lake discharges is to be lowered so as to drop the surface of the lake 6½ feet before pumping begins.

The following notes on the draining operations at Kerr Lake during the summer and autumn of 1913 have kindly been supplied by Mr. Robert Livermore, manager of the Kerr Lake Mine:

"After the granting of permission in May, by the Mining Commissioner to dewater Kerr Lake, work was taken in hand at once. All preliminary surveys had been made some time previously, defining the route for the water via a 20" pipe line directly from Kerr to Giroux Lake, crossing the Kerr Lake property over the height of land between the two lakes. The greatest elevation of the line above water level of Kerr Lake is 53 feet, the linear distance from lake to lake 2,400 feet and the difference in elevation between the two lakes 20 feet.

Kerr Lake at this time covered an area of 30 acres, of which 18 belonged to the Crown Reserve, 6 to Kerr Lake, and 6 to the former Drummond Mine. The purchase of the latter acreage by the Crown Reserve and Kerr Lake Companies jointly, included the total area of Kerr Lake under the ownership of the latter companies, by whom the entire operation was jointly undertaken and managed. Soundings made of Kerr Lake during the previous winter had established the fact that there were approximately 400,000,000 gallons of water, and semi-liquid mud. Giroux Lake covers some 230 acres, and is of great depth, with a large outlet flowing to the Montreal River, so that by using the direct route instead of via Kerr Lake outlet and Glen Lake, to Giroux as at first proposed, there was no possibility of flooding other properties.

On account of the necessity of pumping a certain amount of mud together with the water in order to clear the bottom of the lake sufficienly for mining purposes, and on account of the changing level of Kerr Lake, and the consequent increase of head against which this material must be pumped, a pumping plant capable of great flexibility, not only in the nature of the material to be handled, and efficiency against a varying head, but also in changeability of base, had to be designed. This plant as finally installed consists of four single stage centrifugal pumps, arranged in two units. Each unit makes a compound pumping outfit of two pumps arranged one on each end of the base with a direct coupled motor between the two. The pump shells are 1½" thick with removable side discs, the

Rich Vein on Kerr Lake Property exposed by draining of Kerr Lake.

runners are of the enclosed type capable of handling solids up to 4" in diameter. Each unit was designed to deliver not less than 3,000 gallons per minute at the highest elevation to be encountered. At the start the four pumps were to work in parallel, each discharging its own stream into the main pipe through specially cast fittings. When the head became so great that the best efficiency was not to be had, a change could be made from parallel to tandem operation simply by connecting the discharge from one pump of each unit to the intake of the other, by which arrangement two units, each of a two stage tandem pump, could be obtained.

The pumps were built by the Morris Machine Works, of Baldwinsville, New York. Their total weight is 28,000 lbs.

The motors to run the pumps were furnished by the Canadian Allis Chalmers Company. They are 250 h.p. induction motors, 2,200 volts, 3 phase, 60 cycles, having a synchronous speed of 1,200 revolutions per minute.

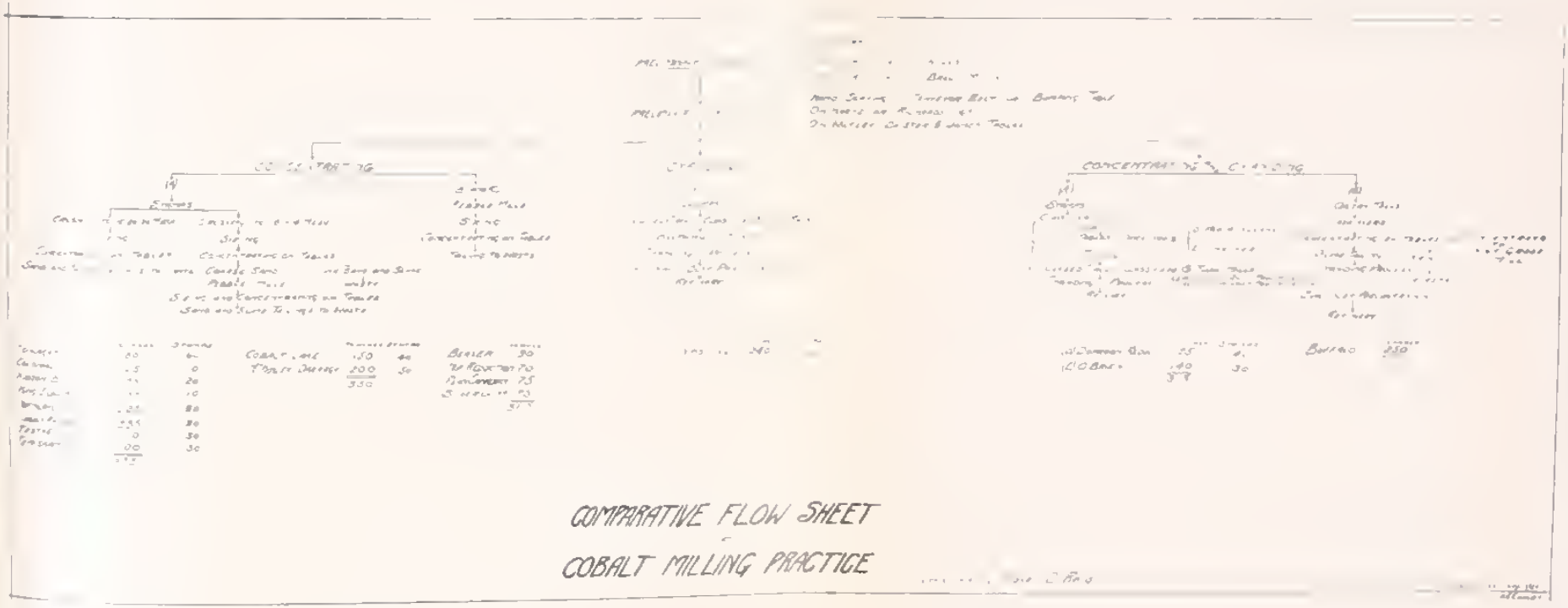
The pumps are mounted on a scow built at the Crown Reserve shops on the shore of Kerr Lake, of western fir throughout. 6" x 6" frame timbers, and 3" plank for sides, deck, and bottom were used. After installing the pumps and motors the scow was housed with a weather-tight super-structure.

Power is obtained from the line of the Northern Ontario Light and Power Company which passes through the property, 2,200 volts are carried directly to the scow.

Flexibility of connection was obtained between the pumps and the shore end of the pipe by 20" flexible ball and expansion joints, joined by a connecting flanged length of 20" pipe. As the level of the lake lowered new lengths of pipe were inserted between the ball joints, and supported by trestle bents, having slings for lowering the pipe as the level changed. The ball joint on shore was firmly bolted to a cement pier, and when the scow's distance from shore became too great for practicable support of the connecting lengths of pipe, the ball joint was moved down to the new water line, and re-established on a new pier. The scow was moored with wire hawsers at each corner passing to shore. These hawsers were manipulated by small capstans set up on shore and on the deck of the scow. In addition two 30', 14", x 10" spuds were provided, running in wooden guides at the stern of the scow, which could be raised and lowered at will, but in practice it was found that the mooring lines were ample to hold the scow in position.

The 20" pipe line connecting the two lakes was of the spiral, riveted, bolted, joint type, supplied by the American Spiral Pipe Works. This pipe was laid on the ground where possible, but where inequalities of the country made it necessary, on simple bents, two to each length. When the pipe crossed the township highway it was laid in a culvert blasted from the rock, and where it crossed the track of T. & N. O. Railway it was carried over, at a distance of 23 ft. above the rail, by two four-post towers built of 8" x 8" timbers somewhat of the ordinary aerial tram type. The angle of crossing made a span of 90 ft., for which three flanged lengths were used supported by strap hangers at 8 foot intervals hooking over four 7/8" cables, passing over the tops of the towers in pairs, and anchored by logs set 6 feet under a stone fill. The pipe line was carried directly to the water level of Giroux Lake, and later was extended in a long curve by extra lengths of pipe, and by a flume, to a remote cove of the lake, in order to avoid muddying the main body of the water.

As the two operating companies, and the Cobalt Comet Mine, formerly obtained their water for mine and domestic purposes from Kerr Lake, a new supply



COMPARATIVE FLOW SHEET

COBALT MILLING PRACTICE

was necessary to take its place. To this end a permanent pumping plant was installed on the shore of Giroux Lake. A well 10 ft. square and 12 ft. deep was sunk in solid rock at the waters edge, and a 5 ft. cut blasted through to the lake. Over this well a pump-house was erected, and two single stage turbine pumps, each of a capacity of 500 imperial gallons per minute against a head of 175′, driven by direct connected motors, were installed. The speed of operations of these pumps is 1,750 revolutions per minute. The motors are each 45 h.p., 2,200 volts, 3 phase, and 60 cycles. The water carrying line for this supply is of 8″ spiral riveted bolted joint pipe, 1,300 ft. in length, connected with a 46,000 gallon receiving tank, erected on the highest point of land between the two properties. From this tank the supply for the different mines is piped.

By the arrangement of the pump intakes in the well above described, the difficulty of protecting the suction lines against freezing, and of building secure piers, which would have been met with had the lines been carried out into the lake, were obviated. The various distributing pipe lines were securely protected against freezing by water-tight wooden boxes filled with sawdust, and heated by a one-inch line carrying steam from the boilers.

The pumps were built by the Canadian Allis Chalmers Company, the motors by the Canadian General Electric Company, and the spiral pipe furnished by the American Spiral Pipe Works.

A signal system, in which a float in the receiving tank, by making various electrical contacts at different stages of water, lit warning lights and sounded an alarm bell at the pump-house, was put in, and was found to work successfully.

The draining pumps were started on August 28th, and operations proceeded steadily until the cold weather in the latter part of November caused suspension of work, until the following season. The clear water was taken out very rapidly, and during the last three weeks the pumps were handling mud alone. In all some 325,000,000 gallons of mud and water were removed at an average rate of 6,000 gallons per minute for 38 actual working days.

Although the lake was not totally de-watered, a sufficiently large area was cleared to make available for stoping and development the most important blocks of ground of the two companies, and it was demonstrated that the remaining fluid could be pumped without undue difficulty the following season.

Several important veins were disclosed, some of which had not been known before. One of the encouraging features revealed by the exposure of the lake bed was the fact that the top parts of the veins had been little affected through oxidation of leaching by the lake waters.

Allowing for the usual delays in delivery of equipment, and for a few changes of minor importance in the working out of the scheme, the installation was expeditious, and the operation successful from the standpoint of the two companies concerned. The novelty of the undertaking consisted not so much in the mere project of pumping out the lake, as in the working out of the numerous details, to which careful attention was necessary owing to the wide difference in the nature of material to be handled by the pumps, acting from a moving base against an ever increasing head, and in these respects the problems involved seem to have been satisfactorily solved.

Milling:

Milling this year becomes a still more important feature in the work of the Cobalt Mines. The tonnage of low grade ore treated during the year shows an increase of 46 per cent. over the previous year.

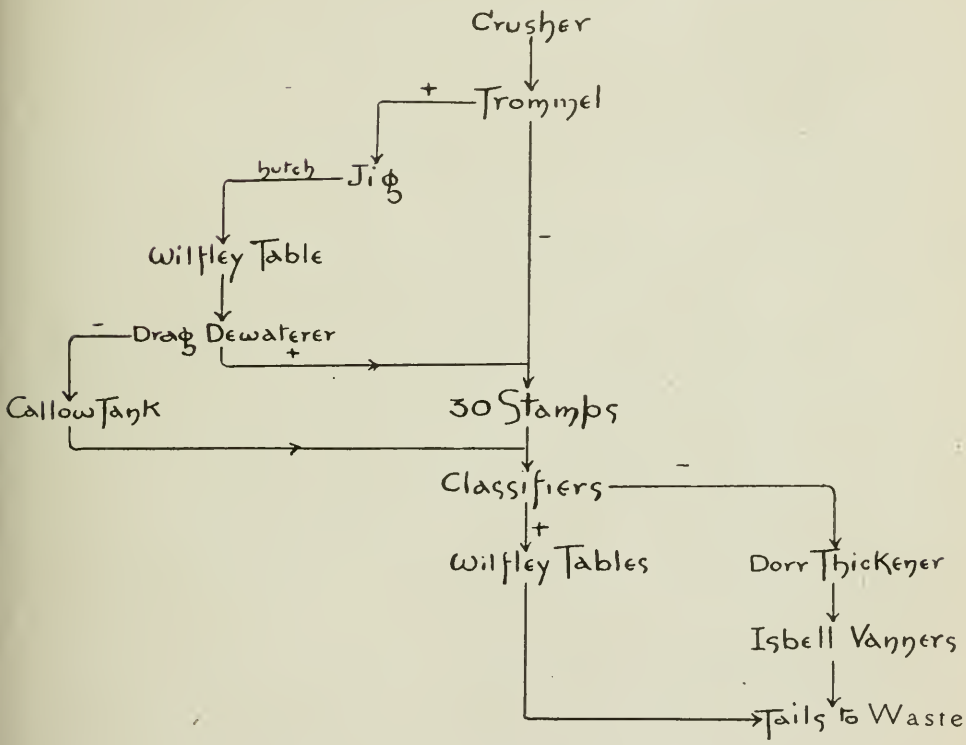
The only new mill coming into operation was that of the Northern Customs. It is situated at Mileage 104, north of the La Rose mine and one mile north of Cobalt. It started operations a few days before the end of the year and in that time treated 1,158 tons of La Rose ore.

A comparison of the concentration ratio this year with those of previous years shows that a higher degree of concentration is now being effected than formerly.

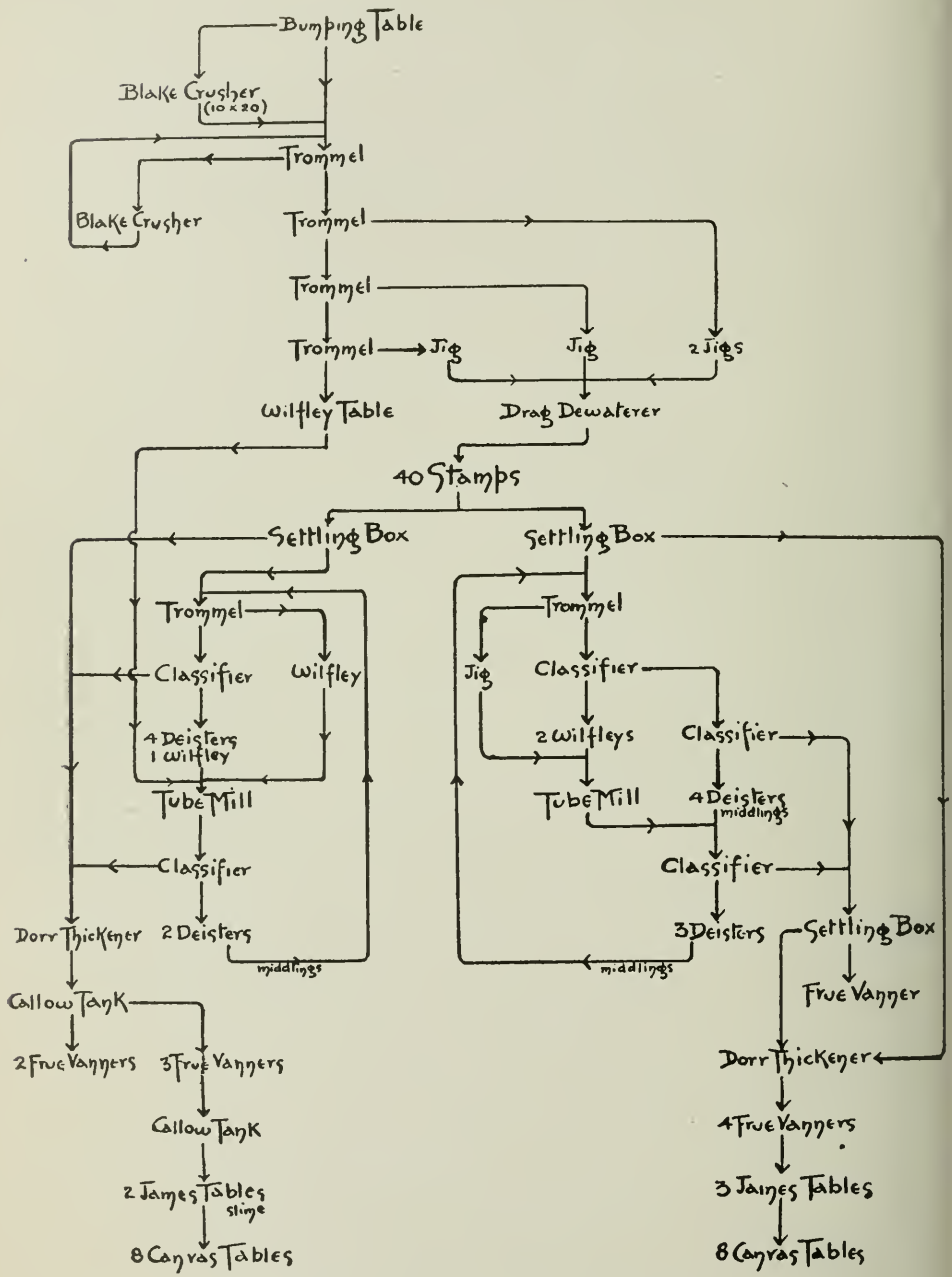
Year.	Concentration Ratio.
1913	47—1
1912	37—1
1911	34—1
1910	39—1
1909	39—1
1908	45—1

MILLING IN COBALT DURING 1913.

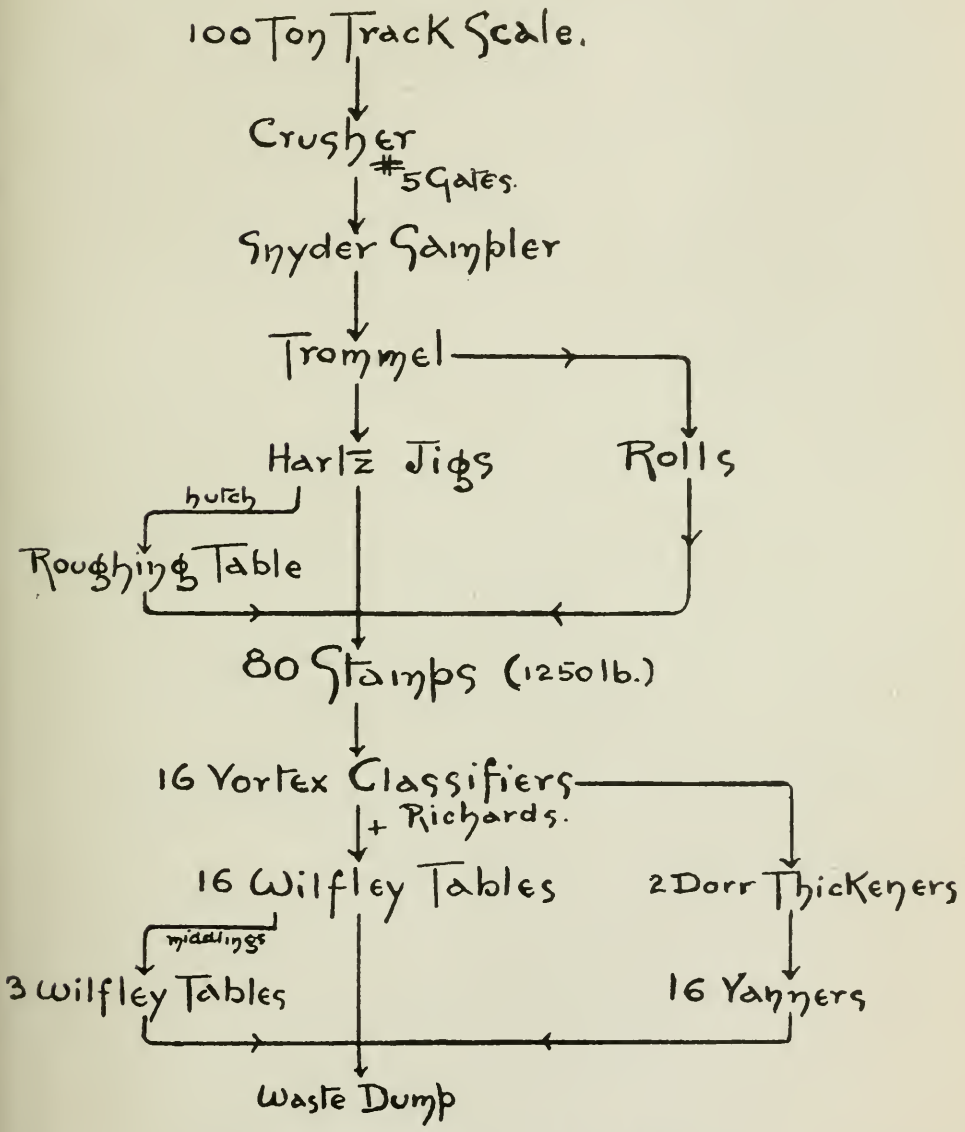
Mills and Mines.	Tons Milled.	Concentrates.			Concentration Ratio.
		Jigs.	Tables.	Totals.	
1. Beaver	24,334	113.0	197.3	310.3	78—1
2. Buffalo	71,042	.....	.....	1,227.3	58—1
3. Casey Cobalt	9,949	18.2	252.6	270.8	37—1
4. Cobalt Lake	37,616	239.6	790.9	1,030.5	37—1
5. Cobalt Reduction					
La Rose	5,452	.....	147.0	147.0	37—1
Townsite	8,829	3.0	155.1	158.1	56—1
6. Colonial	1,500	.....	22.0	22.0	68—1
Right of Way	5,013	.....	84.8	84.8	59—1
7. Coniagas	55,283	201.0	710.0	911.0	61—1
8. Hudson Bay	22,639	154.4	568.1	722.5	31—1
9. King Edward	1,975	1.5	66.5	68.0	29—1
10. McKinley-Darragh	63,057	183.0	1,848.0	2,031.0	31—1
11. Nipissing Reduction.					
Silver Queen	15,674	343.7	113.3	457.0	34—1
12. Northern Customs.					
Comet (Drummond)	11,291	11.8	503.0	514.8	22—1
La Rose	38,714	.....	1,012.4	1,012.4	38—1
Townsite	31,545	29.5	431.3	460.8	68—1
13. O'Brien	40,036	114.0	269.0	383.0	105—1
14. Penn Canadian	16,648	109.9	189.4	299.3	56—1
Bailey	3,156	33.5	50.3	83.8	38—1
Comet (Drummond)	194	.7	5.5	6.2	31—1
15. Temiskaming	32,307	107.4	409.3	516.7	63—1
16. Trethewey	35,294	100.0	484.4	584.4	60—1
Total	531,548			11,301.7	47—1



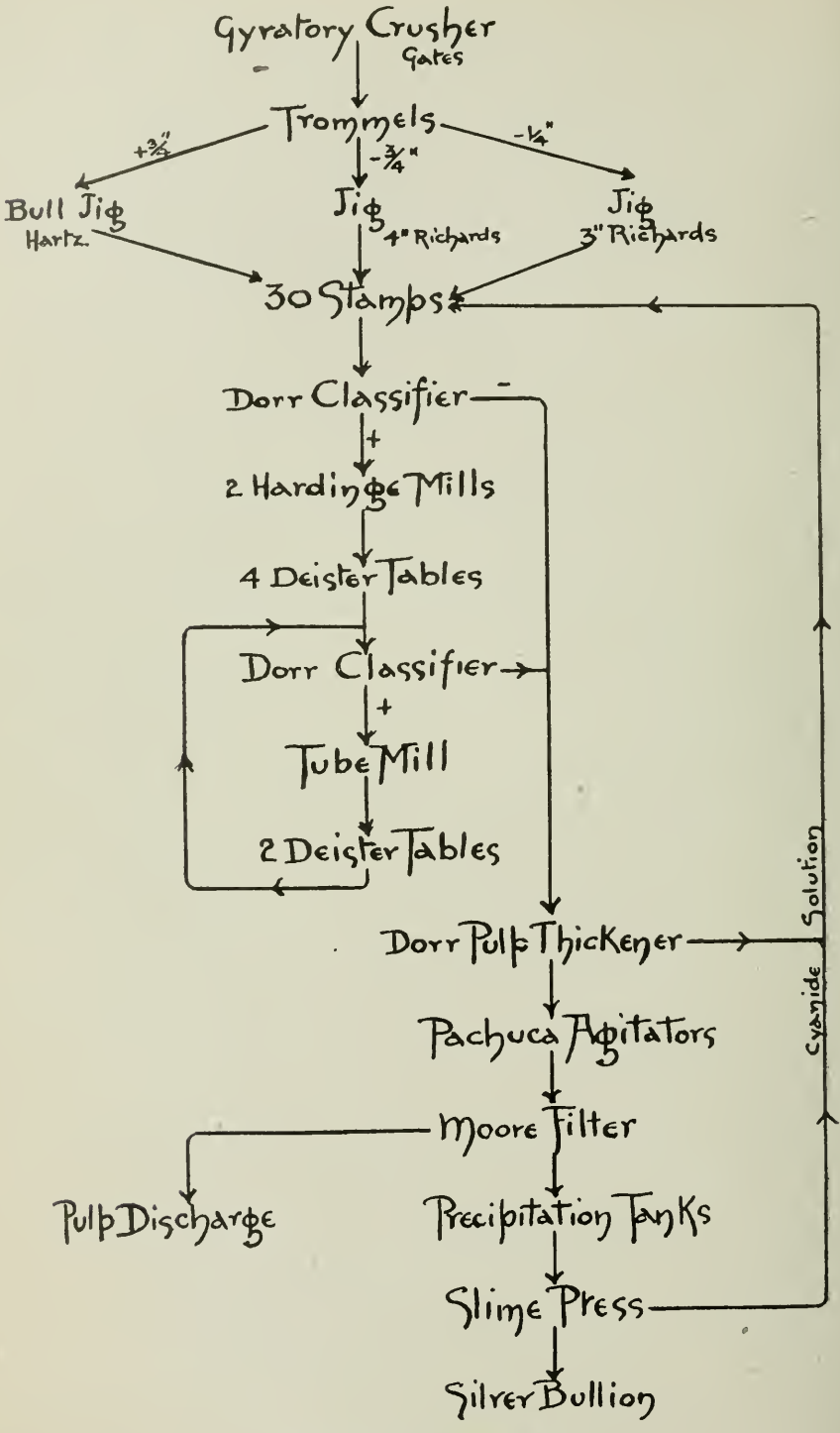
FLOW SHEET, CASEY COBALT CONCENTRATOR.



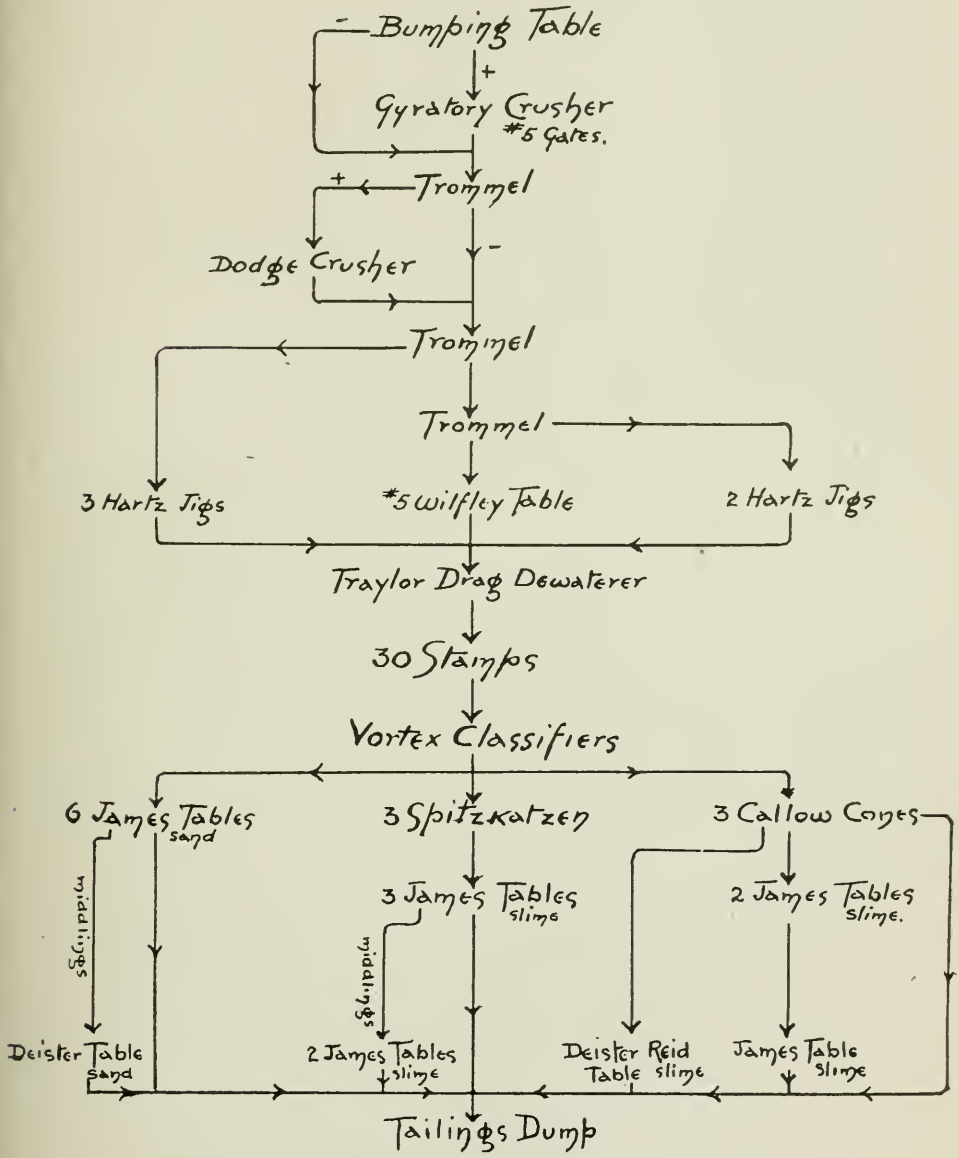
FLOW SHEET, COBALT LAKE CONCENTRATOR.



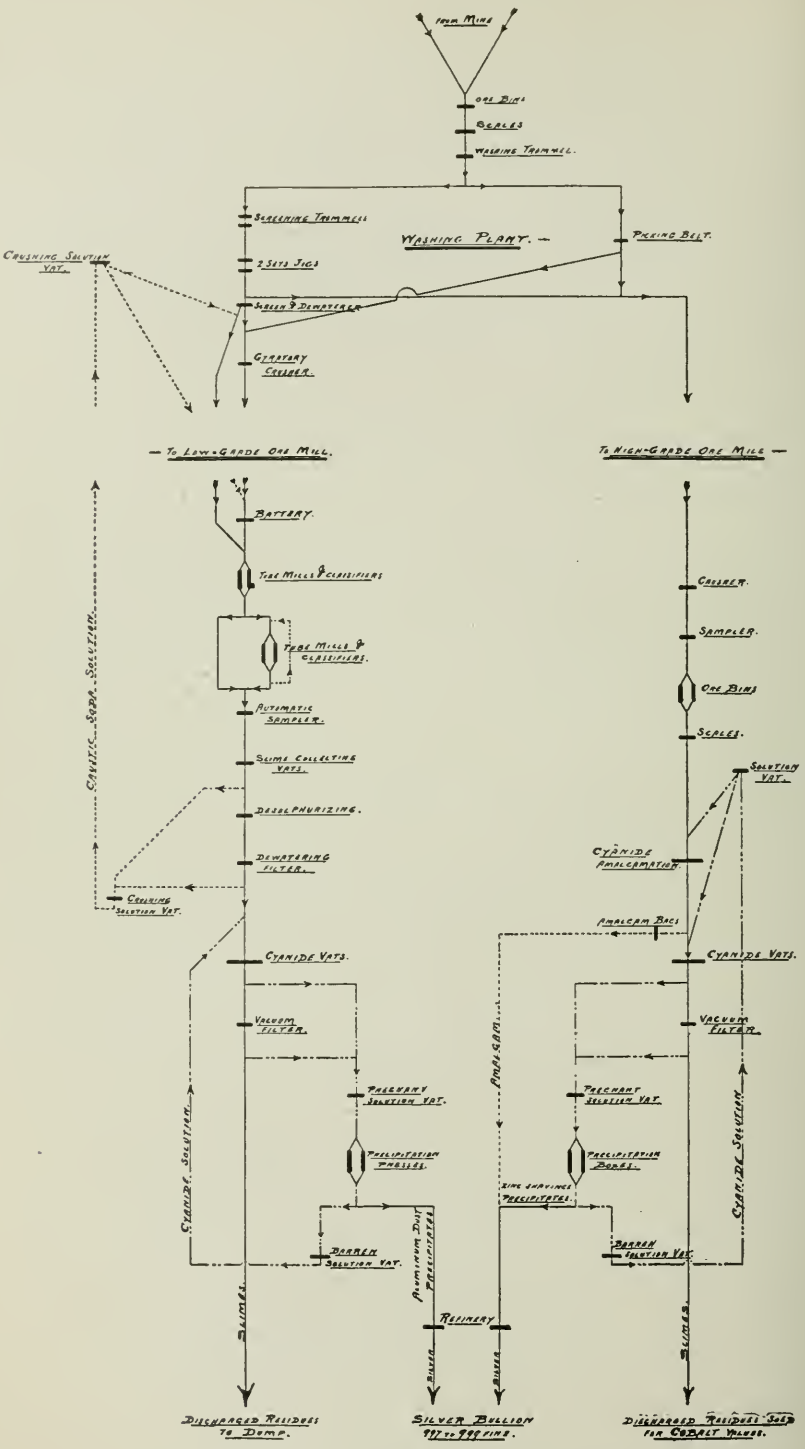
FLOW SHEET, NORTHERN CUSTOMS CONCENTRATOR.



FLOW SHEET, O'BRIEN MILL.



FLOW SHEET, TRETHEWEY CONCENTRATOR.



FLOW SHEET OF NIPISSING MINING CO'S. MILLS.

Cyanide Mills.	Tons Milled.	Bullion Produced. Oz.
17. Dominion Reduction.		
Comet (Drummond)	3,928	
Crown Reserve	29,548	481,718
Hargrave	157	
Kerr Lake	22,471	
Seneca Superior	60	
18. Nipissing, Low Grade	77,133	1,981,371
	133,297	

Total tons milled by Water Concentrating Mills	531,548
Total tons milled by Cyanide Mills	133,297
Total tons milled, 1913	664,845
" " 1912	455,517
" " 1911	381,871
" " 1910	305,513
" " 1909	126,421
" " 1908	49,424
Grand Total	1,984,749

Notes:

The concentrates made in the Low Grade *Buffalo* Mill were sent to the Buffalo High Grade Mill for treatment. The cyanide mill, which forms part of the low grade mill, treated 11,744 tons, producing 110,505 fine ounces.

The *Cobalt Reduction* Mill is the mill that was formerly known as the Northern Customs Concentrator, but was sold and taken over by the new company on the 1st November.

In the early part of the year the *Colonial* Mill was run on Colonial ore, but latterly the mill was leased to the Right-of-Way Mining Company.

Coniagas. The 710 tons of table concentrates shown in above table contain 376 tons of low grade slimes, which were shipped to the smelter without further treatment. If these slimes are eliminated the remaining concentrates show the high concentration ratio of 103 to 1.

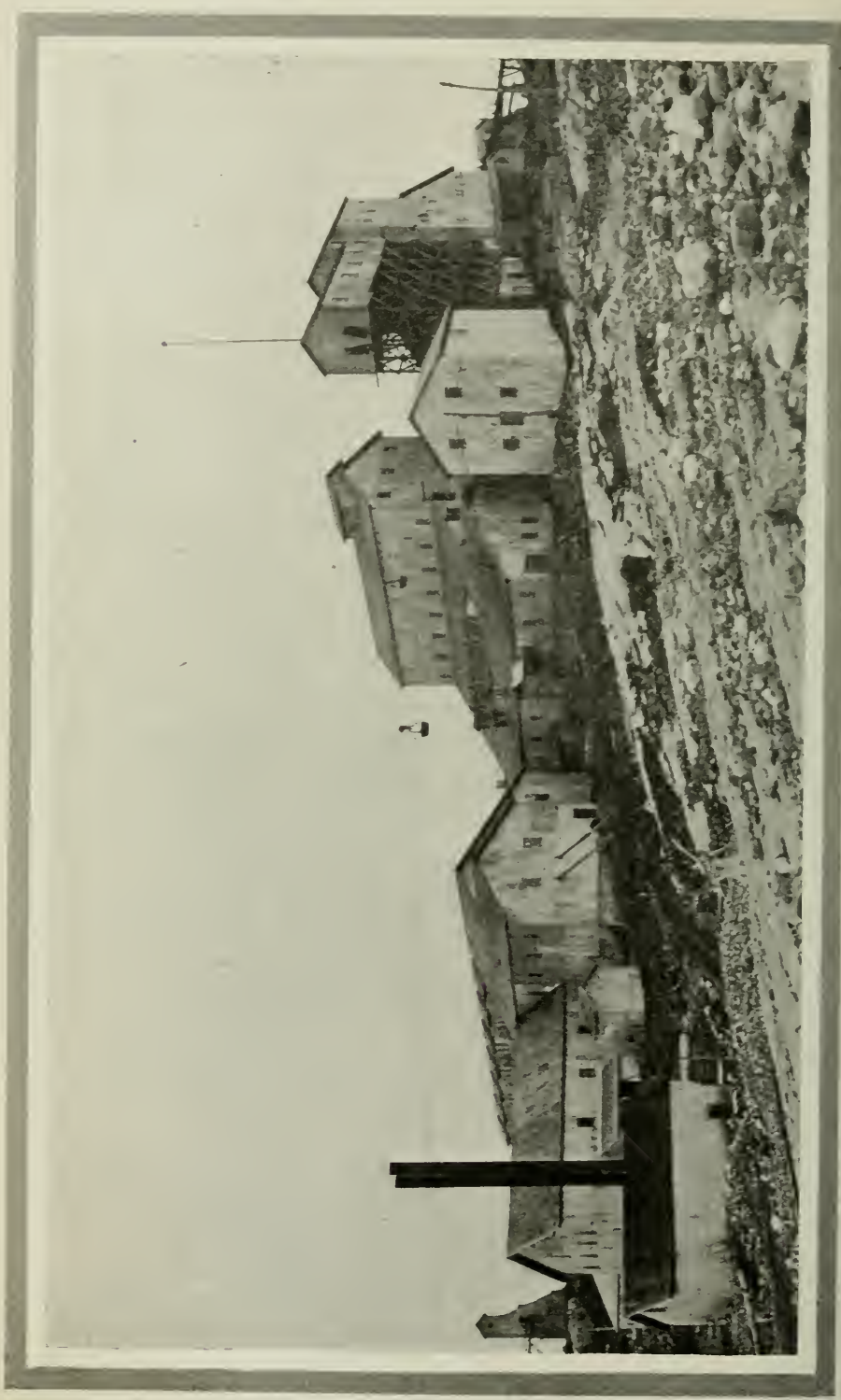
The *King Edward* Mill treated the King Edward ore produced by the York Ontario Mining Company, the company leasing the King Edward Mine.

In the *O'Brien* Mill the jig concentrates contained 159,021 ounces and the table concentrates 380,500 ounces. The tailings from the concentrating tables, amounting to 39,663 tons were cyanided and produced 228,544 fine ounces silver bullion.

At the *Dominion Reduction* Mill beside the silver bullion, there were produced 804 tons of amalgamation residues which were shipped to the smelters.

The only flow sheets published this year are those that are new or show important changes from last year.

Nipissing Low-Grade Ore Mill. The following notes are taken from a paper published in January, 1914, Bulletins of the Canadian Mining Institute and American Institute of Mining Engineers, written by Mr. James Johnston, Metallurgical Engineer, who, in conjunction with Mr. Charles Butters, was responsible for the metallurgical practice and the design of the Nipissing Mills.



Low-grade Ore Mill of Nipissing Mining Company, Limited.

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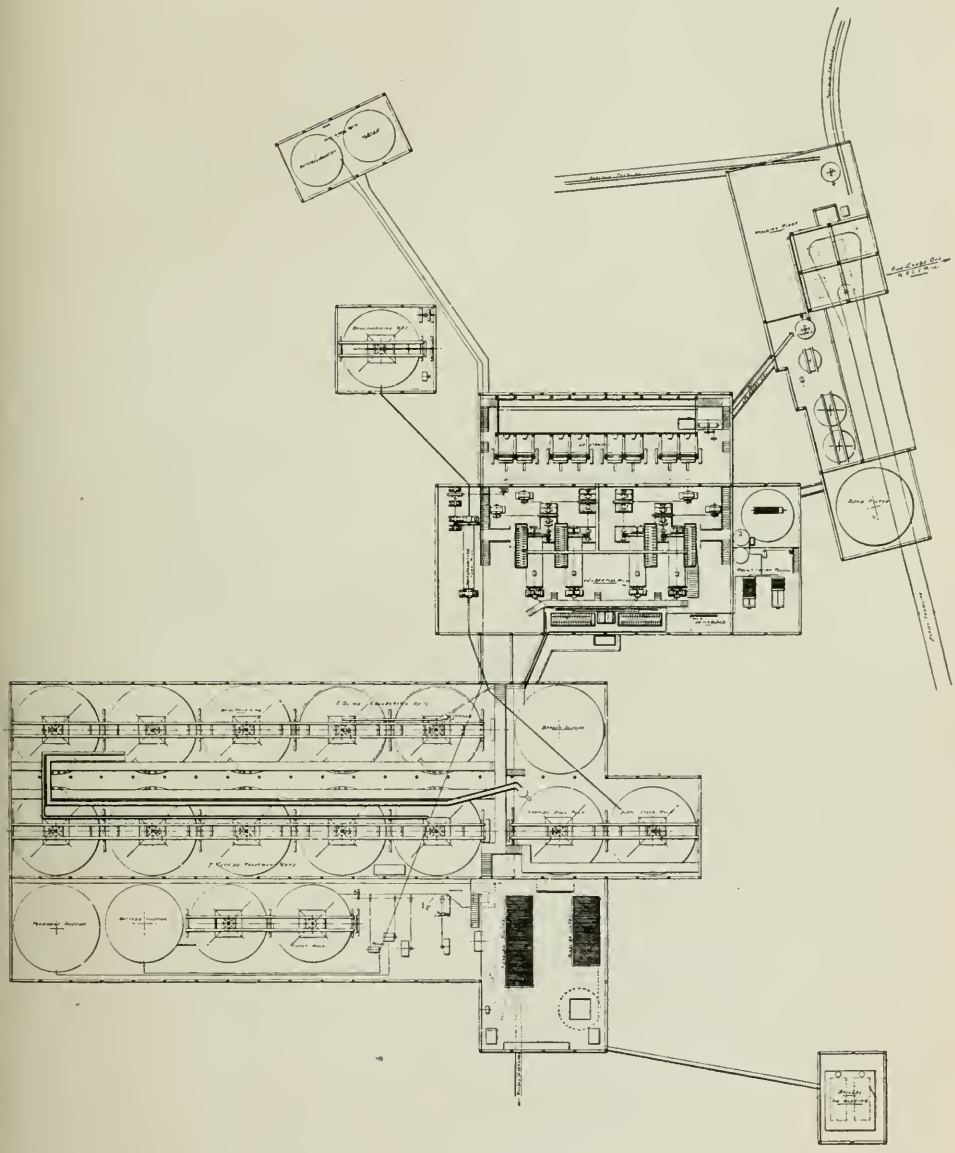


PLAN OF THE LOW-GRADE ORE MILL OF THE NIPISSING MINING CO., LIMITED.

Briefly the mill practice is as follows:—

Crushing the ore to 3" in gyratory crushers before sending it to washing plant.

Hand-picking and jigging of the high-grade ore in the washing plant, which is then sent to the high grade ore mill.

Discards from the washing plant, known as low grade ore, crushed to 1.5" mesh and sent to battery.

Crushing in battery and tube mills in a caustic soda solution to all slimes.

Collecting slimes and desulphurizing in tube mill and vat.

Dewatering slimes and transferring to vats for cyanide treatment.

Filtering slimes and discharging to waste dump.

Cyanide solution from slime treatment vats and filter going to aluminum dust precipitation. Aluminum dust precipitate taken to refinery, melted and refined to silver bullion at 997 to 999 fine.

The mill site is on practically the highest point of the Nipissing hill and is so located that easy tramline communication can be made between any point on the company's property and the mill. Ample dump capacity for residues is provided below the mill.

Excavation for the mill was started November, 1911.

The walls for buildings and machinery foundations are of concrete. The mill building is constructed of wood framing, covered with 1 inch boarding, building paper and corrugated iron, so as to make a warm building for winter service.

The cost of construction of the crushing and cyanide section of the low-grade ore mill was $254,839.52. Other mill construction work undertaken at the same time and which would have been common, either to a cyanide mill or a concentrator included tram lines, washing plant, etc., and cost $69,811.25.

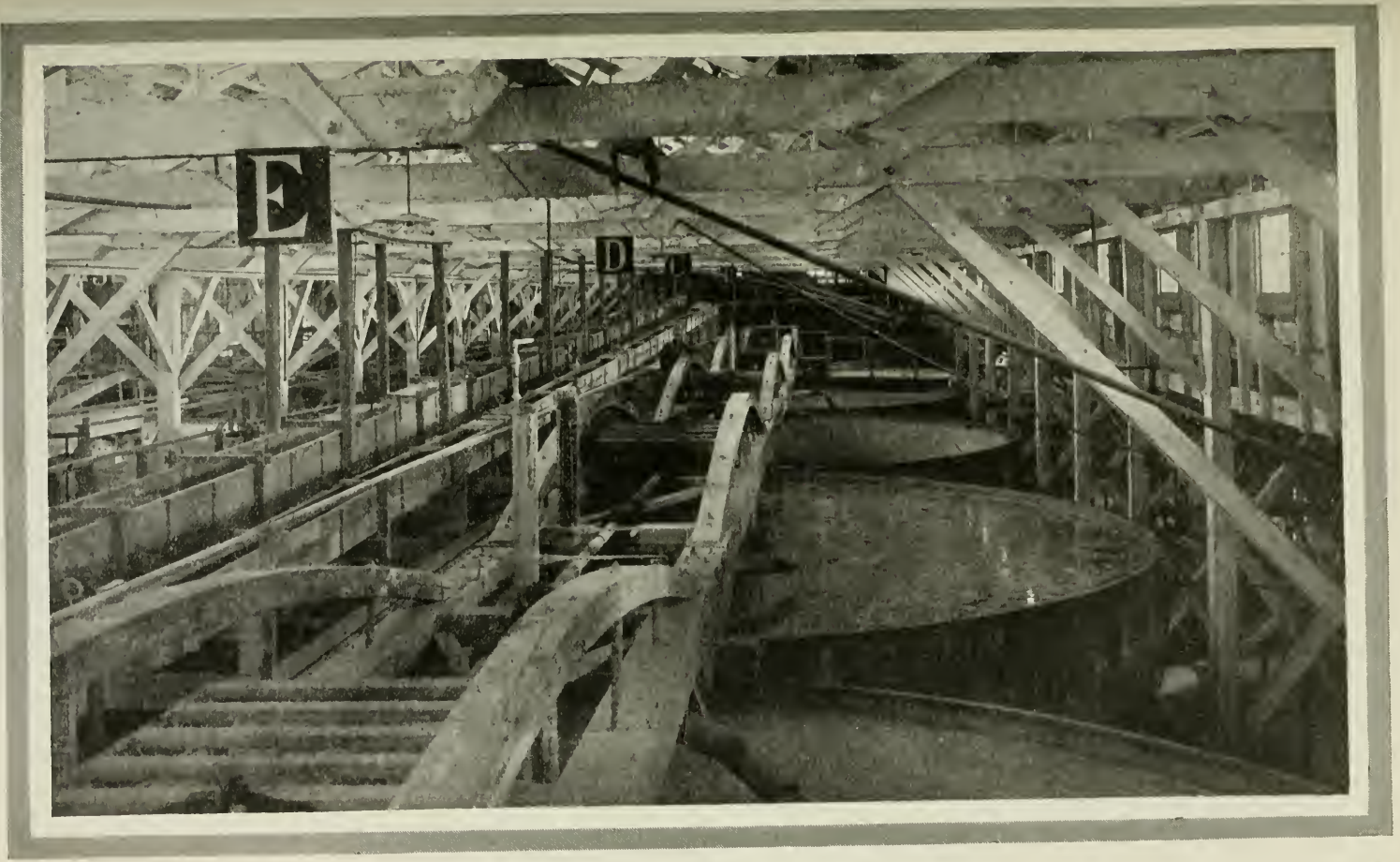
All the ore from the various workings, after it has been crushed to 3 inch cubes in gyratory crushers, is delivered into the ore bins of the washing plant. The ore from the northwest side of Cobalt Lake is brought over in a Bleichert aerial tramway 3,560 feet long, with a rise in elevation between the loading and unloading stations of 172 feet, the longest span being 1,080 ft., the distance across the lake. The tram line runs at 500 ft. per minute and delivers 110 six cubic ft. buckets, equal to about 35 tons per hour, requiring 10 h.p. to operate it. The ore from the workings on the mill side of the property is delivered by surface tram lines.

The ore from the bins is loaded into a 20 cu. ft. car and passed over a Fairbanks registering scale where the record is made of the total weight of ore delivered to the mill. In the washing plant the ore is hand-picked, jigged, and after further crushing to 1.5 inches passes to the battery ore bin.

The high-grade ore, which is sorted out in this part of the mill, varies considerably in quantity and grade, but an average recovery is as follows per 100 tons treated:

Hand-picked ore	0.662 tons.	Average value	2,803 oz. per ton.
First jigs	0.265 tons.	" "	2,496 "
Second jigs	0.138 tons.	" "	2,220 "
	1.065 tons.		2,648.47 oz.

The ore is sent to the high-grade ore mill where it is treated by the cyanide amalgamation process, a recovery of 97 per cent. being obtained by amalgamation and a further 2 per cent. by cyaniding, or a total recovery of 99 per cent. from a 2648.47 oz. silver ore. The residues, which contain from 8 to 9 per cent. of cobalt,



Slime Treatment Vats in Nipissing Low-grade Ore Mill.

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are afterward sold for the value of this metal, and 85 per cent. of the silver contents, so that from an ore of the above original head value, only about 4 oz. of the silver value is not paid for.

The battery consists of forty 1,500 lb. stamps, five to each cam shaft.

The battery screens and crushing duty of the present practice are given herewith:

Stamps.	Mesh per inch.	Size of wire. Inch.	Aperture. Inch.	Stamp Duty per 24 hr.
20	3 x 3	0.072	0.261	6.7 tons
20	2 x 2	0.092	0.408	

On account of the preliminary desulphurizing treatment which is given to the ore before cyaniding, it is necessary to crush in the battery with a 0.25 per cent. caustic soda solution, with no cyanide in it, 5 lb. of lime being added to every ton of the ore as it is placed in the battery ore bin, as being necessary for the settlement of the slime in the collecting vats, enabling a clean solution to be returned for re-crushing and classification purposes.

Extreme fine grinding was found necessary and for this reason all the ore, metallic silver included, is ground to pass a 200-mesh screen; then this product is classified to take out the 200-mesh sands for regrinding and further classification, until there remains only about 15 to 20 per cent. sand much finer than 200-mesh, in the product delivered to the cyanide plant.

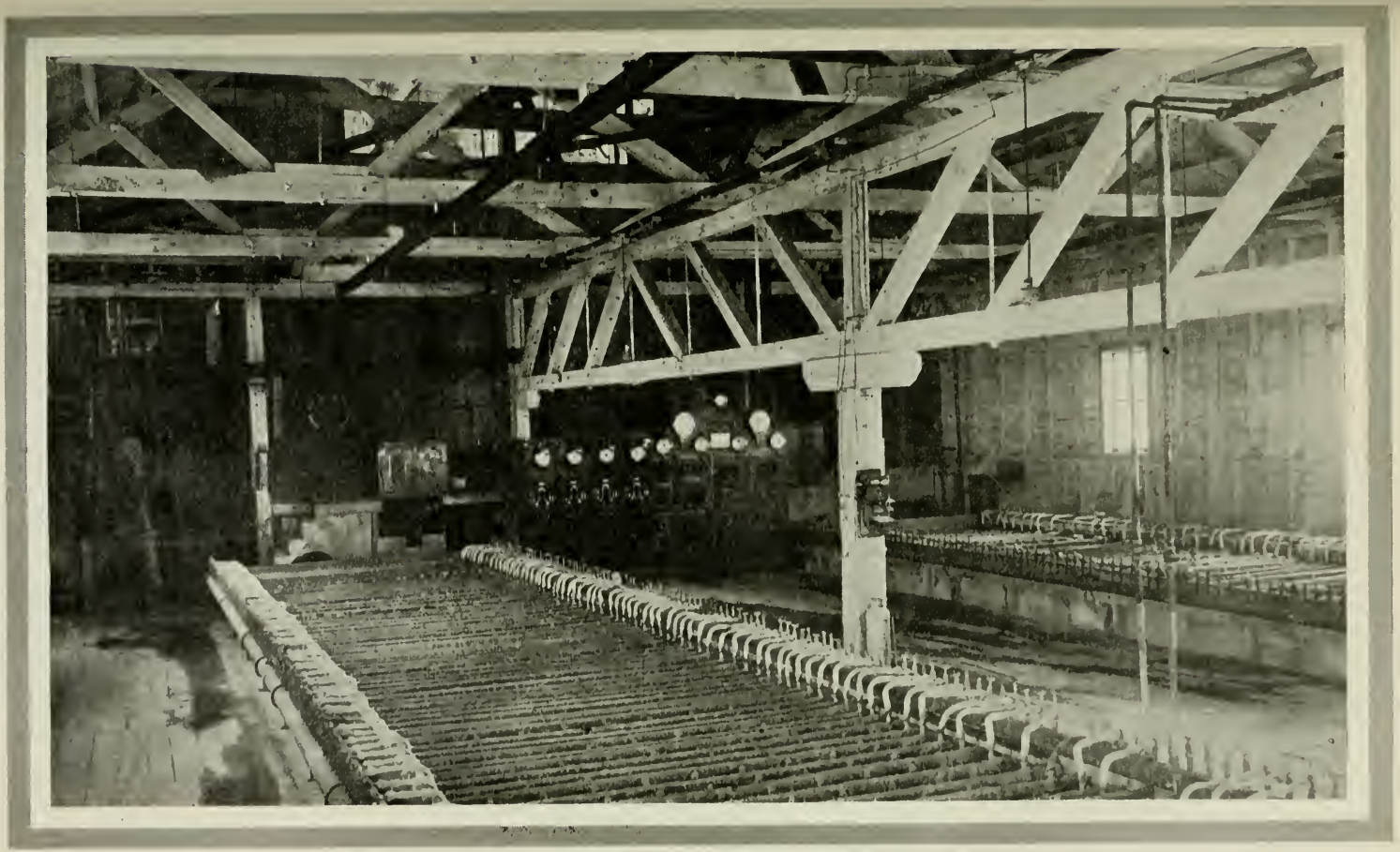
The need for an accurate method to determine the percentage and grading of these sands and slimes resulted in the use of a small system of cone classification to replace the earlier practice of hand panning.

The necessity for such fine grinding of the ore accounts for the large tube mill and classifier capacity as compared with the number of stamps operating. The classification is obtained with one drag classifier and six Dorr duplex classifiers, the slime-overflow lips of which were raised five inches to give more opportunity for the settlement of the 200-mesh sands, and prevent them from being carried over with the fine slimes as they overflow to the cyanide plant.

The four tube mills are 6 ft. in diameter by 20 ft. long. Silex bricks 4 inches thick are used for inside lining. The mills are arranged parallel to each other and at right angles to the battery. They operate in a closed circuit, two of them taking the classified pulp from the battery and the other two taking the classified sands for regrinding. The two coarse grinding tube mills are charged with flint pebbles and a hard-ore pebble, selected from the hardest portion of the run-of-mine ore, and the average consumption of pebbles in these two mills, per ton of ore crushed is about 1.8 lb. flint pebbles and 2.0 lb. ore pebbles. The two fine-grinding tube mills are charged with only flint pebbles and the average consumption per ton of ore crushed is about 4.3 lb., thus giving a total flint pebble consumption of 6.1 lb. and 2 lb. of ore pebbles.

The cyanide plant is placed in a building apart, but connected to the battery and tube mill building. It is arranged in two floors, the upper one containing all the slime collecting and cyanide treatment vats, and the lower one containing all the solution vats, slime filters and pumps.

The battery pulp is run into a vat and thickened till the slime is in the pro-



Butters Slime Filter Plant in Nipissing Low-grade Ore Mill.

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portion of 1 to 1.5 caustic soda solution at 0.25 per cent. strength and then pumped to the desulphurizing treatment.

The preliminary desulphurizing treatment breaks up the refractory silver minerals when the slime pulp is brought into contact with aluminum in a caustic soda solution, the silver being left in a spongy metallic state readily amenable to cyanide treatment.

The desulphurizing is accomplished by passing the slime pulp through a revolving tube mill, in which there is a quantity of aluminum, and a further treatment is given in a vat lined with aluminum plates, in which the pulp is slowly agitated. (See article by J. J. Denny, *Mining and Scientific Press,* Sept. 27th, 1913.)

The practical effects of this preliminary treatment on the ores has resulted in the same and sometimes a better extraction being obtained by 48 hr. cyanide treatment than was otherwise obtained in 120 hr. with no desulphurizing. In some of the ores which contained a greater proportion of refractory silver minerals a better extraction of from 1 to 4 oz. per ton is obtained when desulphurized and cyanided, as compared with a cyanide treatment and no desulphurizing.

After desulphurizing as much as possible of the crushing caustic soda solution is eliminated from the slimes by a Butters filter plant equipped with 60 leaves, capable of dewatering 270 tons of slimes per day. The cake when discharged carries 26 per cent. alkali solution as moisture. The slimes after dewatering, flow into a pulping vat, where they first come in contact with cyanide solution, being diluted with about 2 of cyanide solution to 1 of slime, a 4 inch diameter centrifugal pump being used for transferring the pulp into the cyanide treatment vats.

After agitation of from 48 to 60 hours the pulp is transferred to a Butters filter plant equipped with 80 leaves, and capable of handling 35 to 40-ton charges in three hours each, the slimes being discharged with 26 per cent. of moisture.

After thorough investigation it was decided to use aluminum dust as a precipitant instead of zinc. The practical benefits gained by this change are:

1. No fouling of cyanide solutions, with a corresponding reduction in dissolving efficiency.

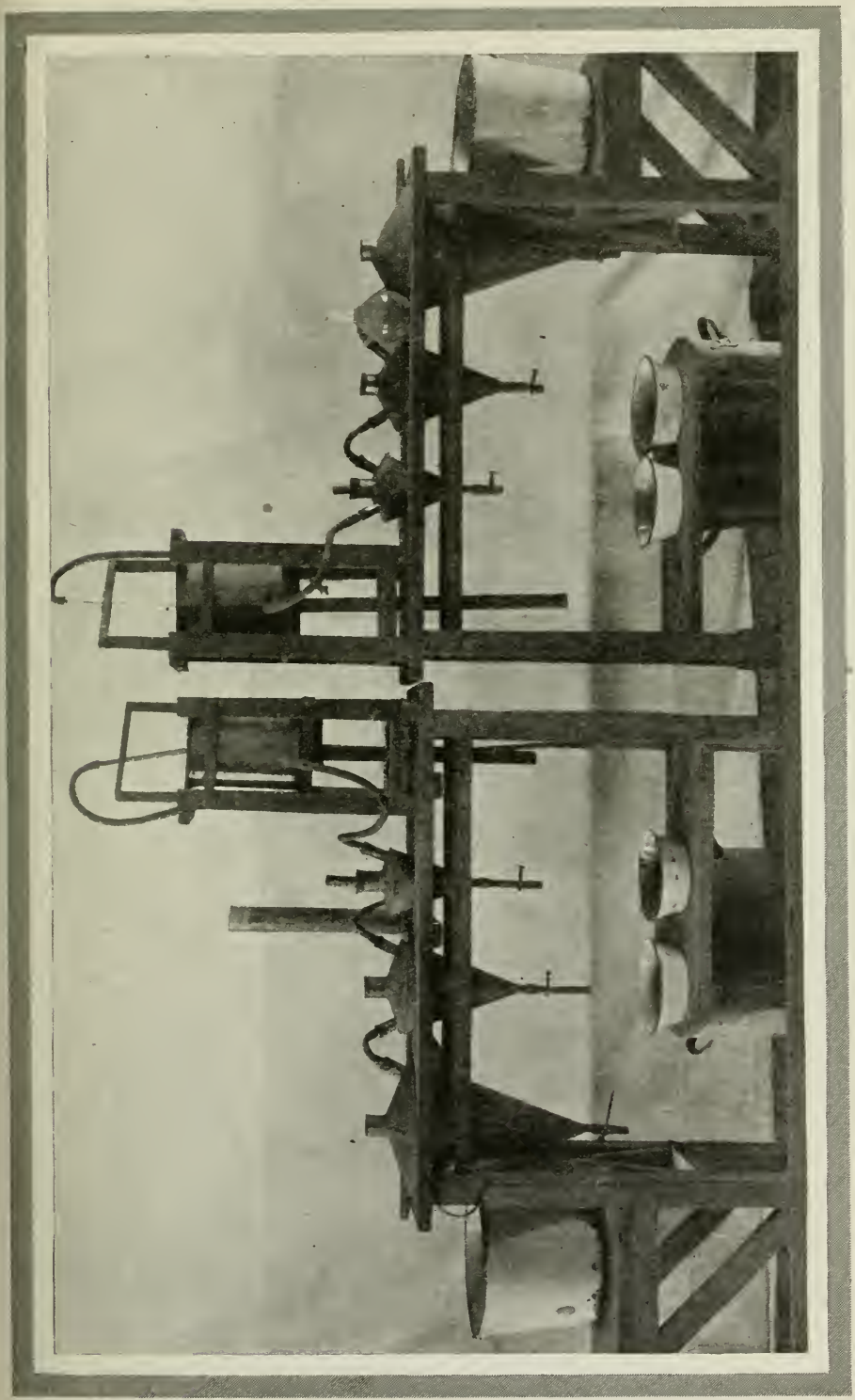
2. The working mill cyanide solutions are in a more active condition to dissolve silver, than if they were freshly made up solutions which had not yet been used, showing in their favor an increased dissolving power of 0.35 oz. of silver per ton of ore.

3. A regeneration of 0.608 lb. of cyanide per ton of solution precipitated, equal to about 1.67 lb. of cyanide per ton of ore treated, or 408 lb. per day.

4. The recovery of silver precipitates, averaging about 27,000 oz. per ton, or about 93 per cent. silver.

The pregnant solution is pumped to the precipitation room, where after being clarified through a sand filter it flows to the special arrangement made for mixing the aluminum dust with the cyanide solution. It is then pumped into the precipitation presses. The 20-frame press takes about four days to fill up with precipitates when handling from 550 to 600 tons of solution per day with a head assay running about 8.25 oz. and the tail assay 0.10 oz. The precipitates are sent to the refinery and are eventually shipped as bullion at 997 to 999 fine.

The following figures represent the average extraction obtained from a run-of-mine ore of 54 oz. of silver per ton, from the combined metallurgy of the high-grade and low-grade ore mills.



Elutriation Apparatus in Nipissing Low-grade Ore Mill.

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	Heads per ton. oz.	Total Silver. oz.	Extraction. %	Average Residue per ton. oz.	Total Residues. oz.
79 tons.....	2648.47	209,229.13	99	26.484	2,092.29
7320 "	26.00	190,320.00	92	2.080	15,225.60
7399 tons.....	54.00	.....	95.66	2.34	.....

To this will be added the further recovery of 85 per cent. of the silver made on the sale of the above 26.484 oz. of residue.

The average operating costs per ton of ore treated for the three months July, August and September, 1913, were as follows:

Tramlines, washing plant, etc	$0.490
New construction	0.310
Milling	2.952

In a mill where the average power costs represent about $4,000 of a total working cost of about $28,000 per month, it was advisable to arrange the installation so that as high an efficiency as possible might be obtained. The installation was so planned that each machine should be of the correct size to carry its load, and thus obtain the highest efficiency and power factor. As a measure of the success obtained in this respect it may be stated that the power factor of the mill averages 82.5 per cent.

The 28 motors installed have a capacity of 1,178 h.p.

High Grade Mills.

The high grade mills of the Buffalo and Nipissing mines, described in a former report operated throughout the year:

The Buffalo High Grade mill treated:

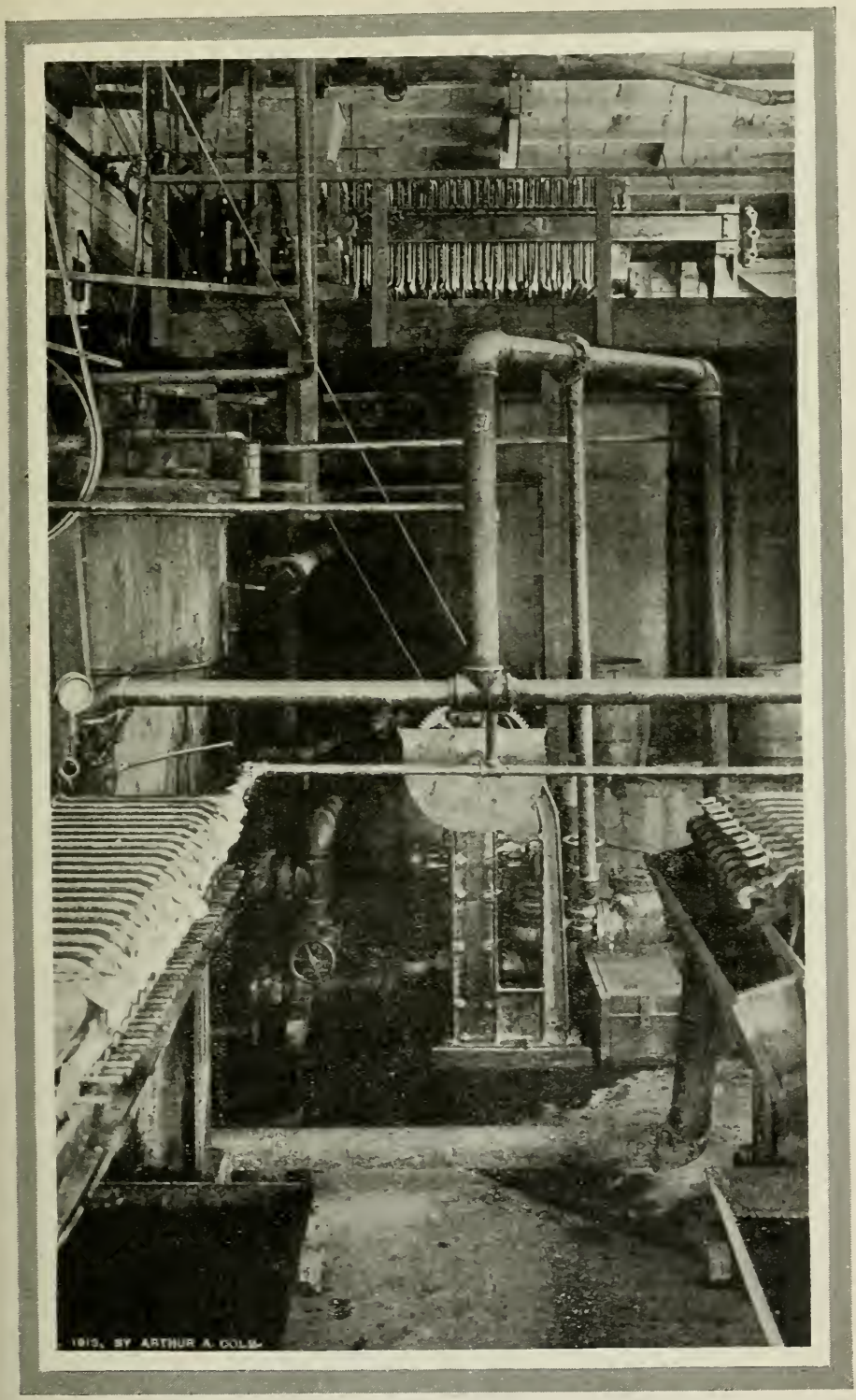
(a) Raw Ore	37.63 tons
(b) Concentrates	1,079.07 tons

Bullion recovered and shipped 1,688,763 fine ounces.

In this bullion is included 110,505 fine ounces recovered from cyanide plant precipitates.

The Nipissing High Grade mill treated during the year:

	Tons.	Oz.
Nipissing high-grade ore	1,199.5	3,034.338
Customs	632.1	1,803.877
	1,831.5	4,838,215



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Aluminum Dust Precipitation Plant in Nipissing Low-grade Ore Mill.

The customs ore was obtained from the following mines:

—	Dry Weight tons.	Total Contents Silver oz.
City of Cobalt	5.24	15,436.63
Cobalt Comet	40.72	75,529.85
Crown Reserve	18.94	65,075.00
Kerr Lake	219.57	775,810.04
La Rose	245.31	570,202.04
Temiskaming	90.55	263,876.73
Wettlaufer	11.73	37,946.68
Total	636.06	1,803,877.01

Power:

The Northern Ontario Light and Power Company is developing further power on the Montreal River at Fountain Falls two miles below Ragged Chutes. The installation consists of two units of 2,500 k.v.a. each.

It is expected that these will be ready to put into commission by the 1st April, 1914.

Freight Rates on Silver Ore.

The freight rates on silver ore over the Timiskaming and Northern Ontario Railway to the smelters in effect on the first of January, 1914, were as follows:

From Cobalt, North Cobalt, Haileybury and New Liskeard to North Bay—

Silver Ore, Carloads, Minimum 40,000 lbs.

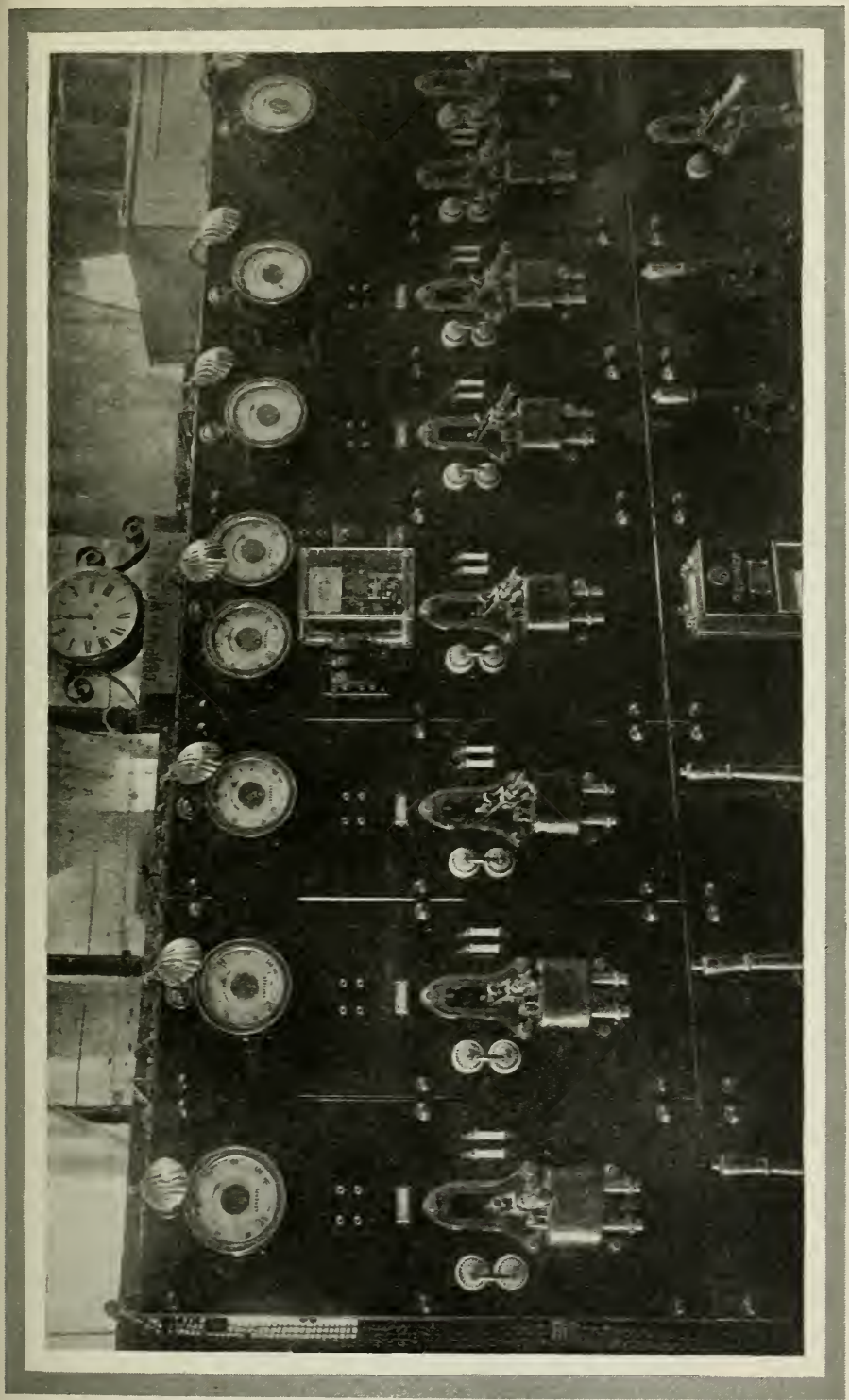
Below $49.00 per ton	10c.	per 100 lbs.
Above $49.00 per ton, billed to Canadian points	14c.	"
Above $49.00 per ton, billed to outside points	16c.	"

From Elk Lake to North Bay:—

Below $49.00 per ton	11c.	per 100 lbs.
Above $49.00 billed to Canadian points	15c.	"
Above $49.00, billed to outside points	17c.	"

Silver Ore, Carloads, Minimum 40,000 lbs.

	Rates in cents per 100 lbs. A	B	C	D
From North Bay to				
Kingston, Ontario	15	17	23	29
Orillia "	11	13	17	21
Thorold "	14	16	21	26
Toronto "	12	14	19	24
Marmora "	18	20	27	34
Welland "	15	17	22	28
Cincinnati, Ohio	19	22	29	36
Denver, Colorado	40	46	54	62½
Detroit, Mich.	18	20	26	32½
East Chicago, Ind.	22	26	34	42½
Flint, Mich.	20	24	31½	39
International, Utah	60	69	81	93¾
Omaha, Neb.	30	36	44	52½



Main Electrical Switchboard in Nipissing Low-grade Ore Mill.

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APPLICATION OF RATES.

Group A.—Rates apply when valuation is under $50.00 per ton.
Group B.—Rates apply when valuation is over $50 and under $100 net ton.
Group C.—Rates apply when valuation is over $100 and under $500 net ton.
Group D.—Rates apply when valuation is $500 and over per net ton.

When shipments are made to Eastern United States points, a through rate is not quoted, but cars are billed to the frontier, to Buffalo, Black Rock or Suspension Bridge, N.Y. From there new rates and ratings apply.

SILVER ORE, CARLOADS, MINIMUM 40,000 LBS.

From North Bay to	Rates in cents per 100 lb. A	B	C	D
Buffalo, Black Rock or Suspension Bridge, N.Y., U.S.A.	12½	15	19½	24½

APPLICATION OF RATES.

Group divisions A, B, C and D apply on same valuation as in previous table.

SILVER ORE, CARLOADS, MINIMUM 50,000 LBS.

From Buffalo, Black Rock, and Suspension Bridge, N.Y., to	Rates in cents per 100 lbs. A	B	C	D
Bergen Junction, N.Y.	13	16	22	28
Carnegie, Pa.	10	11½	18	25½
Chrome, N.J.	13	16	22	28
Newark, N.J.	13	16	22	28
New York, N.Y.	13	16	22	28
Perth Amboy, N.J.	13	16	22	28

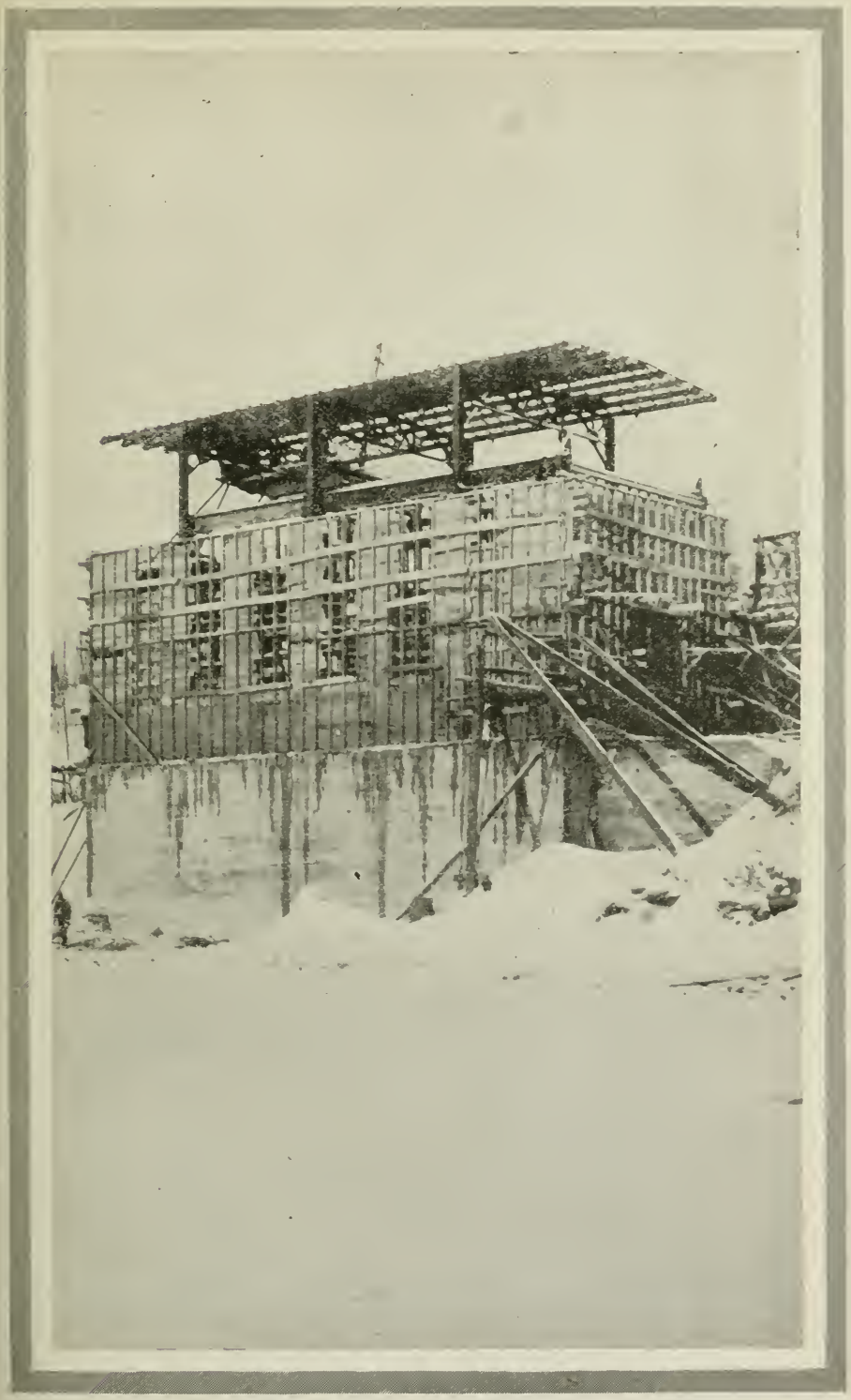
Group A.—Rates apply when valuation is under $100 00 per net ton.
Group B.—Rates apply when valuation is over $100 and does not exceed $800 per net ton.
Group C.—Rates apply when valuation is over $800 and does not exceed $2,000 per net ton.
Group D.—Rates apply when valuation is above $2,000 per net ton

Note:

Shipments are billed at the highest rates (Column D), and charges are collected at destination accordingly. On presentation of paid expense bill and signed assay certificate from the smelter showing the value of the ore to be less than the rating of Group D, charges are adjusted in accordance with the valuation to the above rates. The smelter returns to the mine or owner before deducting transportation charges are the values used in determining the freight rates.

Smelting:

The market for Cobalt silver ores has been more restricted this year than previously and at times it has been difficult to dispose of stocks on hand, particularly if running high in arsenic. In the autumn of 1912 the Canadian Copper Company decided to close up and abandon its Cobalt plant and since that time has accepted no Cobalt ores. The market was further restricted by the withdrawal of the Canada Smelting and Refining Company on account of a fire which put its works out of commission, early in January, 1913. This company has since been repairing the damage done by the fire and is now cleaning up residues at the plant. No new ore is to be accepted till these residues are disposed of.



Fountain Falls Power Development on the Montreal River.
Power House under construction.

Practically all of the ores from the Cobalt district treated in Canada were taken by

1. Coniagas Reduction Company, Thorold, Ont.
2. Deloro Mining and Reduction Company, Deloro, Ont.

Most of the foreign shipments went to the United States. A few were shipped to the Saxon Government by the Crown Reserve Mining Company. Regular shipments of cobalt-nickel residues from the Nipissing high grade mill were made by the Nipissing Mining Company to H. Wiggins & Co., of Birmingham, England. In this case payment was made for the cobalt contents as well as for the silver.

The American Smelting and Refining Company took most of the shipments going to the United States though occasional shipments were also accepted by the Pennsylvania Smelting Company, Carnegie, Pa.

Balbach Smelting and Refining Company, Newark, N.J., and the United States Metals Refining Company, Chrome, N.J.

Coniagas Reduction Company, Thorold, Ontario.

The smelting schedule of this company published 1st November, 1911, is still in operation.

The output of the smelter up to the 31st December, 1913, is as follows:

Year.	Ores treated. Tons.	Silver, Fine. Ounces.	Cobalt, Oxide Tons.	Nickel, Oxide Tons.	White Arsenic, Tons.
1908	266.8	360,683	5.5	1.5	13.5
1909	1,116.9	1,659,604	.9	.....	100.0
1910	2,017.25	3,485,243	53.8	13.2	557.7
1911	2,821.50	5,770,271	60.5	17.3	766.1
1912	2,288.77	4,824,632	129.0	50.7	636.7
1913	2,509.8	4,977,012	250.6	115.6	319.4
	11,021.02	21,077,445	500.3	198.3	2,393.4

Deloro Mining and Reduction Company, Limited.

In order to increase the output of this company's plant at Deloro and at the same time effect certain economies in production extensive additions are under construction. The principal extensions consist firstly in the installation of a blast furnace of double the capacity of the present one.

This, in conjunction with an increased capacity in the roasting plant will enable the company to handle from 300 to 400 tons of silver-cobalt ore per month. It is planned to balance the whole plant in proportion to this. Already various changes and additions have been made in the Oxide plant which have materially increased the capacity of that section. With further additions which are now going in, the capacity will be still further increased in a comparatively short time, and as this means more work for the silver plant, on account of the increased quantity of revert, etc., the actual capacity of the silver plant for ore will be governed to some extent by the output of the Oxide plant, hence the wide range in the smelting capacity quoted above.

This plant treats both high grade ore and concentrates as well as a limited quantity of those table concentrates which are highly silicious.

It is expected to have extensions completed and the plant working to full capacity early in the spring of 1914. Already contracts have been closed covering the entire output of the oxide plant for a year ahead.

PRODUCTION OF DELORO SMELTER, 1908, TO 31ST DECEMBER, 1913.

	Ore Treated. Tons.	Silver, Fine. Oz.	Cobalt and Mixed Oxides. Tons.	Refined Arsenic. Tons.
Previous to 1913.....	11,065	20,339,860	500	3,275
During 1913	2,920	6,350,500	190	893
	13,985	26,690,360	690	4,168

Canadian Copper Company.

The following statement shows the ore treated and the production of the Cobalt plant of the Canadian Copper Company from the commencement of operations to their close in 1913.

Year.	Ore Treated. Lb.	Silver, Fine. Oz.	*Metallic.		White Arsenic. Lb.
			Cobalt. Lb.	Nickel. Lb.	
1906.....	1,767,692.5	1,282,692.78	9,021	3,987	.....
1907.....	4,560,627.5	3,829,542.82	331,151	138,427	510,622
1908.....	9,857,072.5	8,551,582.07	464,171	268,140	942,827
1909.....	10,651,189.5	8,779,014.55	690,737	463,588	1,242,722
1910.....	9,792,511.0	8,696,624.87	346,483	260,756	843,619
1911.....	6,744,108.0	6,584,102.46	238,684	234,323	680,074
1912.....	3,667,301.0	3,523,207.80	223,163	209,330	476,156
1913.....	186,602.0	47,590.00	15,506	7,161	95,669
	47,227,104.0	41,294,357.35	2,318,916	1,585,712	4,791,689

*These figures represent the metallic nickel and cobalt contained in crude oxides in which form they were shipped.

American Smelting and Refining Company.

Cobalt ores were received by this company throughout the year both at its works at Perth Amboy, New Jersey, and at Denver, Colorado.

All ore shipped to Perth Amboy was from mines which had contracts with the Smelting Company to receive their ore. The schedule was 95 per cent. of the silver paid for with a treatment charge of $8.00.

The ores going to Denver were mostly lower grade and of these 95 per cent. of the silver was paid for with a smelting charge of $9.00 per ton and a penalty of 25 cents per unit of arsenic for each unit in excess of 10 per cent.

Dividends:

The dividends paid by the mining companies of Cobalt form such a large percentage of the production that statements of these dividends are considered worthy of publication here in detail.

A comparison of the dividends paid by mining companies in the different provinces during 1913 is also of interest.

DIVIDENDS PAID BY MINING COMPANIES IN CANADA DURING 1913.

Province.	Number of Companies.	Percentage.	Amount paid during 1913.
British Columbia	6	17	$2,274,583
Nova Scotia	1	3	442,400
Ontario:			
Cobalt	17	71 } 80	10,715,694
Porcupine	1	9 }	
Total for 1913			$13,432,677

BEAVER CONSOLIDATED MINING CO.

Dividends Paid.

1911	8½	$170,000 00
1912	9%	180,000 00
1913.		
December 20	3%	60,000 00
Total to end of 1913	20½%	$410,000 00

THE BUFFALO MINES, LIMITED.

Dividends Paid.

1906	3%	$27,000 00
1907	12%	108,000 00
1908	12%	108,000 00
1909	32%	314,000 00
1910	35%	350,000 00
1911	44%	440,000 00
1912	27%	270,000 00
1913.		
January 1	23%	$230,000 00
February 15	3%	30,000 00
April 1	20%	200,000 00
May 15	3%	30,000 00
July 1	10%	100,000 00
August 15	3%	30,000 00
October 1	20%	200,000 00
November 15	7%	70,000 00
	89%	$890,000 00
Total to end of 1913	254%	$2,507,000 00

CARIBOU COBALT MINES COMPANY.

Dividends Paid.

1913		
December 30th	2½%	$25,000 00

CASEY COBALT SILVER MINING CO.
Dividends Paid.

October 17th		$109,499 33

CITY OF COBALT MINING CO.
Dividends Paid.

1908	10%	$44,483 70
1909	13%	94,837 72
Total	23%	$139,321 42

COBALT CENTRAL MINING CO., LTD.
Dividends Paid.

1909	4%	$192,845 00

COBALT LAKE MINING COMPANY, LIMITED.
Dividends Paid.

1913		
January 2	2.5%	$75,000
May 20	3%	90,000
August 15	2.5%	75,000
November 25	2.5%	75,000
Total	10.5%	$315,000

COBALT SILVER QUEEN MINING CO., LTD.
Dividends Paid.

1907	8%	$120,000
1908	13%	195,000
Total	21%	$315,000

COBALT TOWNSITE MINING COMPANY, LIMITED.
Dividends Paid.

1912	40%	$395,604 10
1913		
February 28	12.5%	125,229 97
April 29	12.5%	124,969 45
August 12	5%	49,987 78
November 11	7.5%	74,981 67
	37.5%	$371,168 87
Total to end of 1913	77.5%	$766,772 97

THE CONIAGAS MINES, LIMITED.
Dividends Paid.

1907	9%	$360,000
1908	11%	440,000
1909	9%	360,000
1910	6%	240,000
1911	36%	1,440,000
1912	36%	1,440,000
1913		
February 1	9%	$360,000
May 1	9%	360,000
August 1	9%	360,000
November 1	14%	560,000
	41%	1,640,000
Total to end of 1913	148%	$5,920,000

CROWN RESERVE MINING CO., LTD.
Dividends Paid.

1908	4%	$70,752 56
1909	71%	1,255,857 94
1910	60%	1,061,288 40
1911	70%	1,238,169 80
1912	60%	1,061,288 40
1913		
January 15	5%	$88,440 70
February 15	5%	88,440 70
March 15	5%	88,440 70
April 15	5%	88,440 70
May 15	5%	88,440 70
June 15	5%	88,440 70
July 15	5%	88,440 70
August 15	5%	88,440 70
September 15	2%	35,376 28
October 15	2%	35,376 28
November 15	2%	35,376 28
December 15	2%	35,376 28
	48%	$849,030 72
Total to end of 1913	313%	$5,536,378 82

FOSTER COBALT MINING CO., LTD.
Dividends Paid.

1907	5%	$45,774 00

TEMISKAMING & HUDSON BAY MINING COMPANY.
Dividends Paid.

1905	200%	$15,522
1906	9000%	698,490
1907	300%	23,283
1908	3500%	271,635
1909	2100%	162,981
1910	2100%	162,981
1911	2400%	186,264
1912	2400%	186,264
1913		
February 12	300%	$23,283
March 31	300%	23,283
May 23	300%	23,283
June 27	300%	23,283
August 19	300%	23,283
November 10	300%	23,283
December 22	300%	23,283
	2,100%	162,981
Total to end of 1913	24,100%	$1,870,401

KERR LAKE MINING COMPANY.
Dividends Paid.

1905	½%	$15,000
1906	4½%	135,000
1907	8%	240,000
1908	15%	450,000
1909	23%	690,000
1910	40%	1,200,000
1911	33%	990,000
1912	20%	600,000
1913		
March, 15	5%	$150,000
June 16	5%	150,000
September 15	5%	150,000
December 15	5%	150,000
	20%	600,000
Total to end of 1913	164%	$4,920,000

La Rose Consolidated Mines Co.

Dividends Paid.

1908	3%	$171,505 20
1909	16%	1,056,945 40
1910	8%	599,430 80
1911	8%	599,450 80
1912	9.5%	711,847 81
1913		
January 20	5%	$374,656 75
April 20	2.5%	187,328 37
July 20	2.5%	187,328 37
October 20	2.5%	187,328 37
	12.5%	$936,641 86
Total to end of 1913	57%	$4,075,821 87

McKinley-Darragh-Savage Mining Co.

Dividends Paid.

1907	2%	$44,130 96
1908	9%	202,189 07
1909	10%	224,716 45
1910	15%	337,115 30
1911	50%	1,123,846 00
1912	40%	899,076 80
1913		
January 1	20%	$449,538 40
April 1	10%	224,769 20
July 1	10%	224,769 20
October 1	6%	134,861 52
	46%	$1,033,938 32
Total to end of 1913	172%	$3,865,012 90

Nipissing Mines Company.

Dividends Paid.

1906	8%	$480,000
1907	14%	840,000
1908	12%	720,000
1909	22½%	1,350,000
1910	35%	2,100,000
1911	30%	1,800,000
1912	30%	1,800,000
1913		
January 20	7½%	$450,000
April 20	7½%	450,000
July 20	7½%	450,000
October 20	7½%	450,000
	30%	$1,800,000
Total to end of 1913	181½%	$10,890,000

Right of Way Mining Co., Ltd.

Dividends Paid.

1907	14%	$69,889 75
1908	14%	69,932 52
1909	37%	184,821 66
Total	65%	$324,643 93

RIGHT OF WAY MINES, LIMITED.

1909	2%	$33,710 00
1910	6%	101,130 00
1911	4%	67,420 00
Total	12%	$202,260 00
Total paid by Right of Way Mining Co.	65%	$324,643 93
Total paid by Right of Way Mines Ltd	12%	202,260 00
	77%	$526,903 93

SENECA SUPERIOR SILVER MINES, LTD.
Dividends Paid.

1913		
February 15	10%	$47,638 40
April 15	10%	47,638 40
June 15	10%	47,888 40
August 15	10%	47,888 40
October 15	12.5%	59,860 50
December 15	12.5%	59,860 50
Total	65%	$310,774 60

TEMISKAMING MINING COMPANY, LTD.
Dividends Paid.

1908	9%	$209,156 25
1909	12%	300,000 00
1910	11%	275,000 00
1911	9%	225,000 00
1912	9%	225,000 00
1913		
January 18	3%	75,000 00
April 18	3%	75,000 00
	6%	$150,000 00
Total to end of 1913	56%	$1,384,156 25

TRETHEWEY SILVER-COBALT MINE, LTD.
Dividends Paid.

1906	4%	$37,818 00
1907	4%	37,818 00
1908	15%	141,817 50
1909	25%	244,545 00
1910	10%	100,000 00
1911	20%	200,000 00
1912	10%	100,000 00
1913		
January 15	10%	100,000 00
December 15	5%	50,000 00
	15%	$150,000 00
Total to end of 1913	103%	$1,011,998 50

WETTLAUFER-LORRAIN SILVER MINING CO.
Dividends Paid.

1911	15%	$212,488 50
1912	20%	283,318 00
1913		
January 20	5%	70,829 50
October 22	5%	70,829 50
	10%	$141,659 00
Total to end of 1913	45%	$637,465 50

DIVIDENDS PAID BY COBALT MINES TO 31st DECEMBER, 1913.

Mining Company.	Percentage paid during 1913.	Amount of Dividends and Bonuses paid during 1913.	Total Percentage paid to 31st Dec., 1913.	Total amount of Dividends and Bonuses paid to 31st Dec., 1913.
	%	$	%	$ c.
1. Beaver	3	60,000 00	20.5	410,000 00
2. Buffalo	89	890,000 00	254	2,507,000 00
3. Caribou Cobalt (Drummond)	2.5	25,000 00	2.5	25,000 00
4. Casey Cobalt	.....	109,499 33	.....	109,499 33
5. City of Cobalt	.....	.....	23	139,321 42
6. Cobalt Central	.....	.....	4	192,845 00
7. Cobalt Lake	10.5	315,000 00	10.5	315,000 00
8. Cobalt Silver Queen	.....	.....	21	315,000 00
9. Cobalt Townsite	37.5	371,168 87	77.5	766,772 97
10. Coniagas	41	1,640,000 00	148	5,920,000 00
11. Crown Reserve	48	849,030 72	313	5,536,378 82
12. Foster	.....	.....	5	45,774 00
13. Hudson Bay Tem. & Hud. Bay	2100	162,981 00	24100	1,870,401 00
14. Kerr Lake (Holding Co.)	20	600,000 00	164	4,920,000 00
15. La Rose	12.5	936,641 86	57	*1,204,862 72
(Holding Co.)				4,075,821 87
16. McKinley-Darragh	46	1,033,938 32	172	3,865,012 90
17. Nipissing Mines Co.	30	1,800,000 00	181.5	† 400,000 00
(Holding Co.)				10,890,000 00
18. Right of Way. M. Co.	.....	.....	65	324,643 93
Right of Way Mines	.....	.....	12	202,260 00
19. Seneca Superior	65	310,774 60	65	310,774 60
20. Temiskaming	6	150,000 00	56	1,384,156 25
21. Trethewey	15	150,000 00	103	1,011,998 50
22. Wettlaufer	10	141,659 00	45	637,465 50
23. Private Corporations	.....	.....	.....	3,250,000 00
		$9,545,693 70	.....	50,629,988 81

*Profits paid to owners previous to May 31st, 1908.
†Paid to syndicate in 1905-6.

NICKEL.

The Alexo Mine continues to be the only operating nickel property in the district. The ore is extracted by opencut work and is all shipped to the Mond Nickel Company's smelter at Coniston.

The shipments for the year 1913 amounted to 4,202 tons.

COPPER.

The Dane Mining Company continued operations during the year, and in March shipped 86.65 tons of copper ore to the United States.

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REPORT

ON

THE PREPARATION AND COST

OF

TEXT-BOOKS

IN THE

PROVINCE OF ONTARIO

1914

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:

Printed and Published by L. K. CAMERON, Printer to the King's Most Excellent Majesty

1914

Return to an Order of the House, twenty-first of April, 1914, for a Return showing: (1) The present practice of the Department of Education in regard to the number of text-books authorized for use in each subject in the Course of Studies; (2) The number of text-books authorized for use in the elementary and secondary schools of Ontario issued since the date of the last Return laid before this House, March 20th, 1911; and the methods adopted to keep these books up to the requirements of the schools; (3) The cost to the Province of each of these books in the form of payments to authors, printers, and electrotypers; (4) The estimated saving to purchasers of all text-books in elementary and secondary schools on all the books, as compared with previous prices of the same; (5) The amount annually paid in royalties by the Department of Education to writers of authorized text-books; (6) The cost to the Province of the preparation, editing, and printing of supplementary readers authorized for use in the schools; (7) The amount paid annually by publishers to any official of the Department of Education on text-books authorized for use in the schools of this Province; (8) What Ontario books have been adopted in other Provinces.

Presented to the Legislative Assembly, April 29, 1914. Mr. Musgrove.

1. The present practice of the Department of Education in regard to the number of text-books authorized for use in each subject in the course of studies.

The practice is to authorize but one text-book in each subject in the public school course of study, and but one in each subject in the high school course.

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2. (*a*) Number of text-books authorized for use in the Elementary and Secondary Schools of Ontario since the date of the last Return laid before the House March 20th, 1911.

Elementary Schools: Two.
Secondary Schools: Nine.

(*b*) Methods adopted to keep these books up to the requirements of the schools.

The contracts between the publishers and the Minister of Education contain the following clauses:

1. The publisher shall submit to the Minister sample sheets of each form of each edition of the book about to be printed, and specimens of the ink, mill-board, cloth, mull, tapes, and other material proposed to be used in the printing and construction of the book, together with a declaration of what are the current prices, the weight, size, and other particulars necessary to judge of the relative quality of the different materials proposed to be used; and the approval of the Minister shall, before any work is proceeded with, be obtained of each and every particular thereof, and the publisher shall submit to the Minister for his approval sample copies of each and every edition of the finished book before the same are offered for sale for use in the schools of the Province of Ontario, and no copy of any edition of the book shall be sold or disposed of for use in the schools of the Province of Ontario without such approval having first been had and obtained.

2. The paper to be used in each and every edition of each and every copy of the book shall be a chemical wood pulp (sulphite process) with at least fifteen per cent. of rag pulp, and shall contain no mechanical wood pulp. For the (*name of the book*) it shall be super-calendered, and it shall be according to the sample hereto annexed weighing at least eighty-five pounds to the ream of five hundred and ten sheets, each sheet measuring thirty-one inches by forty-one inches. (If mill-finished paper, the corresponding weight is eighty pounds.)

3. The ink shall be of the best quality of book ink.

4. The press work shall be such as to produce from the electrotypes supplied a clear and distinct impression of every page and illustration in each book.

5. The tapes, mull, end papers, and cloth shall be according to the sample hereto annexed. The millboard shall be according to the sample annexed.

6. Each section of each book shall be sixteen pages, and each section shall be strongly sewn with thread to three tapes overlapping one inch on each side; the tapes shall be covered with coarse, strong, evenly-made mull, extending to within one-half inch from the top and bottom of each book, and overlapping from three-quarters of an inch to one inch on each side; over the mull a strong piece of paper or lining shall be glued; and the book thus stitched and having proper end papers shall be strongly pasted into cases of millboard according to the sample annexed, and covered with well-finished plain cloth turned in at the sides and ends, which cloth shall be according to the sample annexed.

7. Each and every part of each book shall be so manufactured as to make the book strong and durable.

8. No advertisement of any kind shall appear in the book or upon the covers.

9. The said sample copies which are to be furnished as hereinbefore provided for, or which shall be taken for examination by the officer representing the Minister as hereinafter provided, shall remain on file in the Department of Education, and each and every copy of each and every edition published shall in all respects be identical with the sample copy or copies approved of by the Minister.

10. The Minister or any person appointed by him in writing for that purpose shall and may, from time to time and at any time during business hours, during the term covered by this contract, enter the warehouse and all other business premises or any part thereof of the publisher, for the purpose of inspecting any and every edition or issue of the book, and every copy thereof, and shall have the right to take away from the premises, free of charge, sample sheets or other samples of material, or sample copies of the book in any state of manufacture, for the purpose of examination and report, whenever he thinks proper so to do.

11. The Minister may, on giving six months notice to the publisher, require him from time to time to make any alterations in the contents of the book which the Minister may consider desirable, and such alterations shall be made by the publisher at his own expense, and the Minister may on a like notice alter the specifications of the book; and the publisher shall thereafter in the publication of the book conform to such alterations; but it is agreed that no alterations shall be required to be made, by virtue of any provision in this contract, (including the regulations of the Department of Education) in the book or in the contents of the book, or shall be made in the specifications, which will increase to the publisher the cost of the manufacture of the book, other than any additional cost for changing the plates, which shall be borne by the publisher. No change shall be made by the publisher in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject-matter thereof, without the consent in writing of the Minister first had and obtained.

12. In case any edition of the book is condemned by the Minister as unfit for use in the schools of the Province of Ontario, the condemned edition shall be withdrawn from sale, and shall, if required by the Minister, be delivered by the publisher into the custody of the Minister.

In brief, the following is the practice:

Each publisher submits samples of the materials to be used in the publication of an edition. These samples are thoroughly tested in the Department of Edu-

cation and, if found satisfactory, one is given to the publisher, and another is filed in the Department, with dates, quality, etc., endorsed thereon. Sample sheets of presswork are submitted, and filed if approved. When the book is printed and bound, copies are submitted for examination and are compared with materials previously accepted. If satisfactory these copies are endorsed, and one copy given to the publisher and the other filed in the Department. Not till these conditions have been complied with, is the publisher at liberty to offer the books for sale.

At such times as the Minister may direct, an official visits the publishing houses and examines the books, either in process of manufacture, or on the shelves, to see that the terms of the contract are observed.

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3. The Cost to the Province of each of these Books in the form of Payments to Authors, Printers, and Electrotypers.

Elementary Schools:

Ontario Public School Composition	Nothing.
Ontario Writing Course	Nothing.

Secondary Schools:

Ontario High School Reader	Nothing.
Ontario High School English Grammar	Nothing.
Ontario High School English Composition	$1,963.03.
Ontario High School History of England	Nothing.
Ontario High School French Grammar	Nothing.
Ontario High School French Reader	$672.05.
Ontario High School German Reader	$714.55.
Ontario High School Physics	Nothing.
Ontario High School Laboratory Manual in Physics	Nothing.

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4. (*a*) Estimated saving to Purchasers of all Text-books in Elementary and Secondary Schools on all the Books as compared with previous prices of the same.

ELEMENTARY SCHOOLS (PUBLIC SCHOOLS).

Old Text-books.	Price.	New Text-books.	Price.
Readers:		Readers:	
Ontario, Part 1, 64 pp., *or* Modern Phonic Primer, 64 pp. *or* Public School Phonic Primer Part I, 64 pp.	$0 10	Primer, 96 pp.	$0 04
Ontario Part II, 96 pp., *or* Modern Phonic Primer, Part II, 96 pp., *or* Public School Phonic Primer, Part, II, 96 pp.	15	First Book, 128 pp.	06
Second Book, 184 pp.	20	Second Book, 224 pp.	09
Third Book, 280 pp.	30	Third Book, 352 pp.	14
Fourth Book, 344 pp.	40	Fourth Book, 416 pp.	16
Total for set of Readers	$1 15	Total for set of Readers	$0 49

Old Text-books.	Price.	New Text-books.	Price.
Copybooks:		Copybooks:	
Five numbers (24 pp. each) each	$0 07	Five numbers (24 pp. each) each	$0 02
Total for the set	$0 35	Total for the set	$0 10
Arithmetic, 183 pp.	$0 25	Arithmetic, 256 pp.	$0 10
Public School Grammer, 130 pp., *or* Morang's Modern English Grammar, 191 pp.	$0 25	Grammar, 268 pp.	$0 10
Public School Geography, 206 pp., *or* Morang's Modern Geography, 265 pp. *or* Rose's Public School Geography, 405 pp.,	$0 75	Ontario School Geography, 288 pp	$0 65
Public School History of England and Canada, 284 pp.	$0 30	Public School History of England, 320 pp.	$0 25
History of the Dominion of Canada, Clement, for Fifth Form, 358 pp., *or* Duncan's Story of the Canadian People, 428 pp., *or* Weaver's Canadian History, 312 pp.	$0 50	Public School History of Canada, 302 pp.	$0 25
Practical Speller, 208 pp.	$0 25	Public School Speller, 208 pp.	$0 15
Public School Physiology and Temperance, 202 pp.	$0 25	Public School Hygiene, 256 pp.	$0 20
Public School Bookkeeping, 88 pp.	$0 25	Ontario School Bookkeeping, 106 pp. (Also used in High Schools)	$0 30
Public School Drawing Course—five numbers, illustrated—(24 pp. each), each	$0 05	Ontario Blank Drawing Book, No. 1, 144 pp.	$0 05
None		Ontario Public School Composition, 208 pp.	$0 15
None		Ontario Writing Course	$0 05

HIGH AND CONTINUATION SCHOOLS AND COLLEGIATE INSTITUTES.

Old Text-books.	Price.	New Text-books.	Price.
High School Arithmetic, *or*, Arithmetic for High Schools—De Lury	$0 60	High School Arithmetic	$0 40
High School Algebra, *or* Elements of Algebra—McLellan.	$0 75	Hall & Knight's Junior Algebra..	$0 50
Geometry for Schools—Baker *or* High School Euclid—J. S. McKay *or* High School Euclid—McKay & Thompson	$0 75	High School Geometry	$0 40
First Latin Book and Reader, *or* Primary Latin Book and Reader, *or* Hagarty's Latin Grammar	$1 00	High School Latin Book	$0 60
High School Chemistry	$0 50	High School Chemistry Laboratory Manual	$0 40 $0 20
Myers' Ancient History, *or*, Botsford's Ancient History	$1 00	**High School Ancient History**	$0 75
High School Physical Geography	$1 00	High School Physical Geography	$0 60
High School Drawing Course—two numbers, illustrated, each	$0 10	Blank Drawing Book, No. 2,	$0 05
High School Bookkeeping *or* Commercial Course in Practical Bookkeeping	$0 60 $0 40	Ontario School Bookkeeping (Also used in Public Schools)	$0 30
High School Reader, *or* Principles and Practice of Oral Reading	$0 50	Ontario High School Reader	$0 40
High School English Grammar	$0 75	Ontario High School English Grammar	$0 45
High School English Composition. *or* High School Composition from Models	$0 50 $0 75	Ontario High School English Composition	$0 18

Old Text-books.	Price.	New Text-books.	Price.
Wrong's The British Nation	$1 00	Ontario High School History of England (Revised edition of Wrong's The British Nation)..	$0 65
High School French Grammar and Reader	$1 00	Ontario High School French Grammar	$0 60
		Ontario High School French Reader	$0 11
High School German Grammar and Reader	$1 00	Ontario High School German Grammar	$0 70
		Ontario High School German Reader	$0 13
High School Physical Science, Part I.	$0 50	Ontario High School Physics	$0 90
High School Physical Science, Part II.	$0 75	Ontario High School Laboratory Manual in Physics	$0 35
None		Ontario School Bookkeeping, Second Course	$1 00

TOTAL AMOUNTS SAVED TO PURCHASERS.

Estimates on Basis of Previous Sales and Attendance.

Elementary Schools.

Readers:

The old series contained 968 pages; the new series contains 1,216 pages. The total expenditure on the old series, as shown in the Return to an Order of the Legislative Assembly, dated March 3rd, 1885, and a further Order dated March 20th, 1886, was $21,016.58. From this should be deducted $7,500 paid by the publishers for three sets of electros, leaving $13,516.58 as the actual cost to the Province. The actual cost to the Province of the new series was $8,694.89, and if to this is added $786.66, the cost of the revision of the Primer, the saving over the cost of the old series is $4,035.03.

The retail price of a set of the old readers was $1.15; that of the new readers is 49 cents. The saving to purchasers on the number of new readers sold from publication in August, 1909, to the end of 1913, compared with that on an equal number of the old readers, was $168,100. Estimating future savings at the same rate, the total savings on the readers during the term of the contract will exceed $370,000.

Arithmetic:

The old book contained 183 pages; the new one contains 256 pages. The cost of editing the old book was paid by its publisher; that of the new book, amounting to $3,321, was paid by the Province. The cost of composition and electros for each book was paid by its publisher.

The retail price of the old book was 25 cents; that of the new book is 10 cents. The relative saving to purchasers on the sales from August, 1910, to the end of 1913 was $53,800. Estimating future savings at the same rate, the total savings on the Arithmetic for the term of the contract will exceed $107,000.

Grammar:

The old Public School Grammar contained 190 pages, and Morang's Modern English Grammar 191 pages; the new book contains 268 pages. The cost of editing the old books was paid by their publishers; that of the new book, amounting to $2,323, was paid by the Province. The cost of composition and electros for each book was paid by its publisher.

The retail price of each of the old books was 25 cents; that of the new book is 10 cents. The relative saving to purchasers on the sales from August, 1910, to the end of 1913, was $32,400. Estimating future savings at the same rate, the total savings on the grammar during the term of the contract will exceed $64,000.

Speller:

The old book contained 208 pages; the new book contains 208 pages. The entire cost of preparation and publication of each book was paid by its publisher. The retail price of the old book was 25 cents; that of the new book is 15 cents. The relative saving to purchasers on the sales from the issue of the new book, midsummer, 1909, to the end of 1913, was $38,000. Estimating future savings at the same rate, the total savings on the speller during the term of the contract will exceed $59,000.

Geography:

Under the former system there were three authorized geographies—The Public School Geography, Morang's Modern Geography, and Rose's Public School Geography. Each was sold retail at 75 cents. Under the present system there is one authorized geography, and it is sold retail at 65 cents. The entire cost of preparation and publication of all these books was paid by their publishers, with the exception of an expenditure of $289.90 for expert services on the new geography. The relative saving to purchasers on the sales of the new geography from July, 1910, to the end of 1913, was $20,600. Estimating future savings at the same rate, the total savings on the geography during the ten-year contract will exceed $59,000.

Hygiene:

The Public School Physiology and Temperance contained 202 pages; the new Hygiene contains 256 pages. The cost of preparation and publication of these books was paid by their publishers. The retail price of the old book was 25 cents; that of the new book is 20 cents. The relative saving to purchasers on the sales from July, 1910, to the end of 1913 was $6,700. Estimating future savings at the same rate, the total savings during the term of the contract will exceed $13,000.

History:

Under the former system there were authorized for use in the Public Schools, the Public School History of England and Canada (284 pp.), 30 cents, and the History of the Dominion of Canada by Clement (358 pp.) *or* Weaver's Canadian History (312 pp.), each 50 cents. Under the present system there is a Public School History of England (320 pp.) and a Public School History of Canada (302 pp.), each 25 cents. Practically, 80 cents was spent where 50 cents is now sufficient. The relative saving on the sales from July, 1910, to the end of 1913, was $34,300. Estimating future savings at the same rate, the total savings for the term of the contract will exceed $68,000.

Bookkeeping:

The old book contained 88 pages, and was used only in the Public Schools. The new book contains 106 pages, and may be used in both Public and High Schools. The retail price of the former was 25 cents, that of the latter is 30 cents. As the use of a text-book in bookkeeping is optional in the Public Schools, there is not sufficient data to enable comparisons to be made respecting savings.

Drawing Books:

The old series consisted of five illustrated numbers, each containing 24 pages. Each number was sold at five cents. The new book contains 144 pages, is not illustrated, and is sold at five cents. Though the new book contains over one-fifth more drawing space than the old series, and is sold at one-fifth of the cost, yet, owing to changes in the method of using drawing books, it is difficult to estimate closely how large the saving will be during the term of the contract.

Copy Books:

Each series consisted of five numbers, 24 pages each. The cost of preparation of each series was paid by its publisher. The retail price of the old series was 35 cents; that of the new series is 10 cents. The relative saving to purchasers on the number of new books sold during 1909 and 1910 was $27,000. Estimating future savings on sales of 25,000 copies a year less than were sold in 1910—a number within the actual sales since—the total savings on the copy books during the term of the contract will exceed $102,000.

Composition:

No text-book was prescribed for use in the Public Schools until July, 1910. The new book contains 204 pages and is sold at 15 cents.

High and Continuation Schools and Collegiate Institutes.

Arithmetic:

Under the former system either of two authorized arithmetics could be used, the retail price of each being 60 cents. Under the present system there is one book at 40 cents. The relative saving on the sales from July, 1909, to the end of 1913, was $19,000, and at the same rate on the whole term of the contract, it is estimated at over $29,000.

Algebra:

Formerly, either of two authorized algebras could be used, the retail price of each being 75 cents. Now, there is one book at 50 cents. The relative saving on the sales from August, 1908, to the end of 1913, was $16,000, and at the same rate for the whole term of the contract, it is estimated at over $20,000.

Geometry:

Formerly, one of three authorized geometries could be used, the retail price of each being 75 cents. Now, there is one book at 40 cents. The relative saving on the sales from July, 1910, to the end of 1913, was $12,900, and at the same rate on the whole term of the contract it is estimated at over $25,800.

Latin:

Formerly, one of three authorized Latin books could be used, the retail price of each being $1.00. Now, there is one book at 60 cents. The relative saving on the sales from September, 1908, to the end of 1913, was $18,000, and at the same rate on the whole term of the contract, it is estimated at over $23,000.

Ancient History:

Formerly, one of two authorized ancient histories could be used, the retail price of each being $1.00. Now, there is one book at 75 cents. The relative saving to purchasers from July, 1909, to the end of 1913, was over $6,300, and at the same rate on the whole term of the contract, it is estimated at over $7,500.

German Grammar:

The old book was a grammar and reader combined, and was sold at $1.00. The new book is a grammar, and is sold at 70 cents. With it there is now a reader which sells at 13 cents. The relative saving to purchasers from July, 1909, to the end of 1913, with allowance for the later date at which the reader was introduced, is $3,800, and at the same rate for the whole term of the contract, it is estimated at over $5,900.

Chemistry:

The retail price of the old book was 50 cents; that of the new book is 40 cents, but a laboratory manual at 20 cents has been added to cover the course of study more effectually. The result from July, 1909, to the end of 1913, has been an increased expenditure of $2,400, and on the whole term of the contract, the increased expenditure is estimated at over $3,800.

Physical Geography:

The retail price of the old book was $1.00, that of the new is 60 cents. The relative saving to purchasers from July, 1909, to the end of 1913, was $17,000, at the same rate and on the whole term of the contract, it is estimated at over $26,000.

Bookkeeping:

Formerly, one of two authorized texts could be used, the retail price of one being 60 cents, and of the other 40 cents. Now, there is one book at 30 cents, and this book is also used in the senior class in the public schools. Using the old text at 40 cents for purposes of comparison, there has been a relative saving of over $4,600 to purchasers from July 1910 to the end of 1913 and, at the same rate on the whole term of the contract, it is estimated at over $7,000.

Reader:

Formerly, one of two authorized texts could be used, the retail price of each being 50 cents. Now, there is one book at 40 cents. The relative saving to purchasers from July, 1911, to the end of 1913 was over $3,500, and at the same rate on the whole term of the contract, it is estimated at over $9,000.

English Grammar:

The retail price of the old book was 75 cents; that of the new is 45 cents. The relative saving to purchasers from July, 1911, to the end of 1913 was over $11,000, and at the same rate on the whole term of the contract, it is estimated at over $31,000.

English Composition:

Formerly, one of two authorized text-books could be used, the retail price of one being 50 cents, and of the other 75 cents. Now, there is one book at 18 cents. Using the old text at 50 cents for purposes of comparison, there has been a relative saving to purchasers during 1913 of over $6,000.

Estimating future savings on yearly sales of even one-third the number of copies sold during the first year, the total savings during the term of the contract will exceed $19,000.

History of England:

The retail price of the old book (Wrong's *The British Nation*) was $1.00; that of the new book is 65 cents. The relative saving to purchasers from January 1912 to the end of 1913 was over $6,000. Allowing for a substantial reduction in the number of copies sold each year thereafter, the total savings during the term of the contract will exceed $20,000.

French Grammar:

The old book was a grammar and reader combined and was sold at $1.00. The new book is a grammar and is sold at 60 cents. With it there is now a reader, which sells at 11 cents. The relative saving to purchasers for the first half year was over $4,000. Estimating future savings on yearly sales of even one-third the number of copies sold during the first half year, the total savings during the term of the contract will exceed $17,000.

Physics:

The new physics and the laboratory manual in physics are sold at the same price as the old Physics, Parts I and II.

Drawing Books:

Formerly two illustrated numbers, each containing 24 pages, were in use. Each number was sold at 10 cents. The new book contains 48 pages, is not illustrated, and is sold at 5 cents. Owing to changes in the method of using drawing books it is difficult to estimate closely how large the saving will be during the term of the contract.

Literature Series in English and French:

Formerly these books were sold at prices varying from 50 cents to $1.00. Now, they may be obtained at 15 cents each, and some even at 10 cents. Using the text at 50 cents for the purposes of comparison, the annual saving on these books is estimated at over $9,000, or on the usual life of a contract for authorized texts, $63,000.

Total Savings:

Without including the total savings on the drawing books, which will exceed $20,000, the savings on public school text-books during the terms of the present contract will exceed $845,500; and the savings on high school books will exceed $303,000. The total relative savings on all authorized text-books during the terms of the contracts will exceed $1,168,000. Deducting from this total the cost to the province in the form of payments to authors, printers, and electrotypers, there will remain a net saving of at least $1,150,000.

Note: All retail prices are subject to a discount of 20 per cent. when books are purchased at place of publication.

---

5. The amount annually paid in Royalties by the Department of Education to writers of authorized text-books.

No royalties are paid by the Department of Education to writers of authorized text-books.

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6. The cost to the Province of the preparation, editing, and printing of Supplementary Readers.

Nothing. The cost is borne by the publishers.

---

7. The amount paid annually by Publishers to any official of the Department of Education on text-books for use in the schools of this Province.

Nothing.

8. What Ontario Text-books have been adopted in other Provinces:

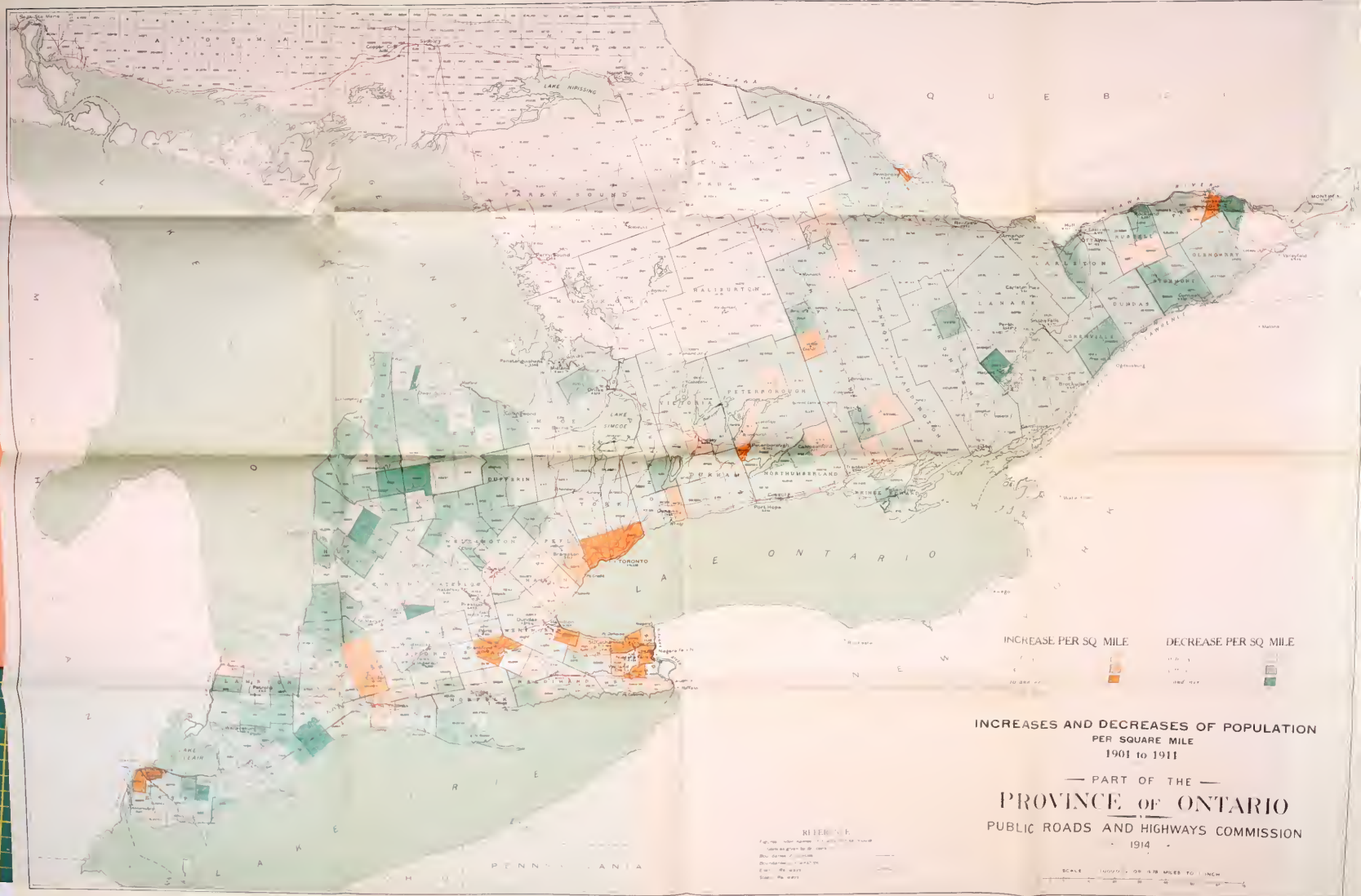
Public Schools:

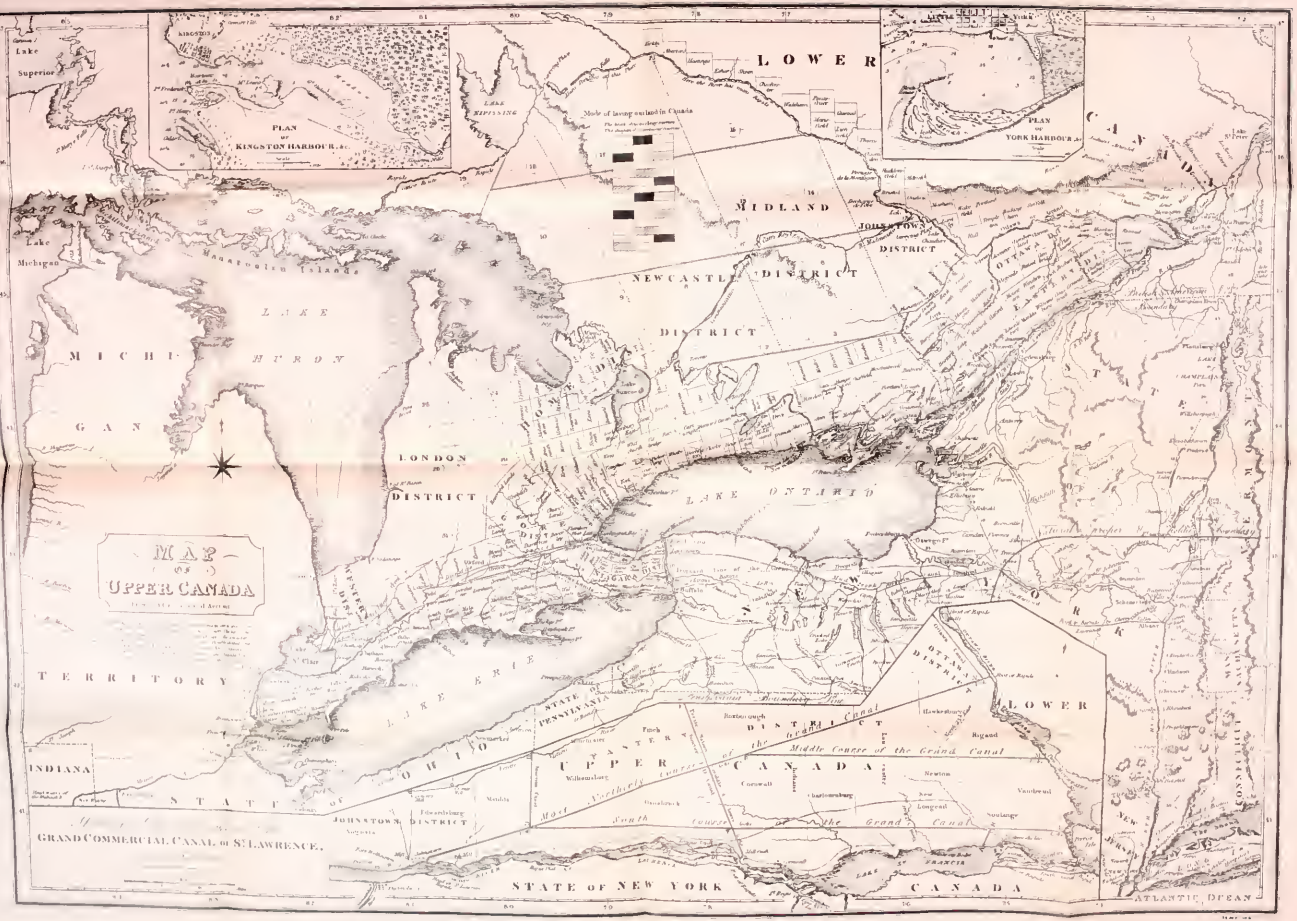
Ontario Public School Arithmetic	Nova Scotia.
Ontario Public School History of England	Prince Edward Island. Saskatchewan. Manitoba.
Ontario Public School Hygiene	Nova Scotia. Province of Quebec. Manitoba (as supplementary).
Ontario Public School Speller	Saskatchewan. Alberta. Province of Quebec.
Ontario Public School Composition	Saskatchewan.
Ontario Copy Books	New Brunswick. Province of Quebec.
Ontario School Bookkeeping, First Course	Saskatchewan. Manitoba.
Ontario Readers	Prince Edward Island. Nova Scotia (1915).

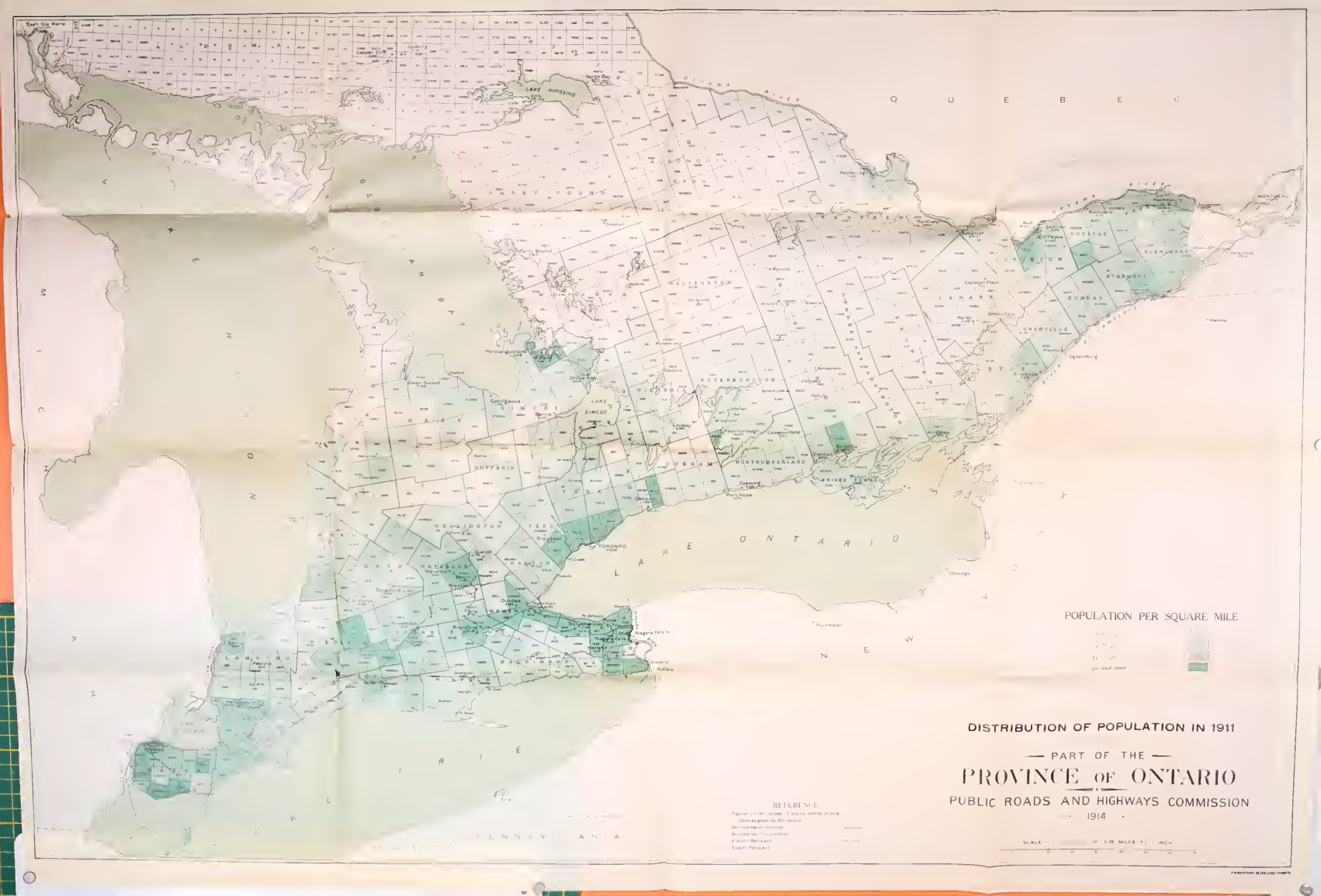
High Schools.

Ontario High School Reader	Saskatchewan (as supplementary)
Ontario High School English Grammar	Saskatchewan. Alberta.
Ontario High School English Composition	Saskatchewan.
Ontario High School Physical Geography	Saskatchewan. Alberta.
Ontario High School History of England	Manitoba.
Ontario High School Arithmetic	Saskatchewan. Alberta.
Ontario High School French Grammar	Prince Edward Island. Nova Scotia. Manitoba. Saskatchewan. Alberta. British Columbia.
High School Ancient History	Saskatchewan.
High School German Grammar	Province of Quebec. Manitoba. Saskatchewan.
Ontario High School Physics Ontario High School Laboratory Manual in Physics	Nova Scotia. Saskatchewan. Alberta. British Columbia.
Ontario High School Chemistry Ontario High School Laboratory Manual in Chemistry	Saskatchewan. Alberta.
Ontario School Bookkeeping, Second Course	Saskatchewan.

Printed by
WILLIAM BRIGGS,
29-37 Richmond Street West,
TORONTO.


INCREASE PER SQ. MILE
DECREASE PER SQ. MILE
INCREASES AND DECREASES OF POPULATION
PER SQUARE MILE
1901 to 1911
— PART OF THE —
PROVINCE OF ONTARIO
PUBLIC ROADS AND HIGHWAYS COMMISSION
1914
LAKE NIPISSING
PARRY SOUND
HALIBURTON
PETERBOROUGH
VICTORIA
DUFFERIN
TORONTO
DURHAM
NORTHUMBERLAND
PRINCE EDWARD
LENNOX
ADDINGTON
FRONTENAC
RENFREW
LANARK
DUNDAS
GRENVILLE
STORMONT
GLENGARRY
RUSSELL
CARLETON
PRESCOTT
L A K E O N T A R I O
Q U E B E C
P E N N S Y L V A N I A


PLAN OF KINGSTON HARBOUR, &c.
PLAN OF YORK HARBOUR &c.
Mode of Inoculation in Canada
LOWER
CANADA
MIDLAND
DISTRICT
JOHNSTOWN
DISTRICT
NEWCASTLE DISTRICT
LAKE
HURON
MICHI-
GAN
LONDON
DISTRICT
LAKE ONTARIO
MAP
OF
UPPER CANADA
TERRITORY
INDIANA
STATE
OHIO
LAKE ERIE
STATE OF PENNSYLVANIA
UPPER
CANADA
Middle Course of the Grand Canal
Lower Course of the Grand Canal
GRAND COMMERCIAL CANAL or St. LAWRENCE,
STATE OF NEW YORK
LAKE ST. FRANCIS
ATLANTIC OCEAN
Lake Superior
Lake Michigan
Manatoulin Islands


POPULATION PER SQUARE MILE
DISTRIBUTION OF POPULATION IN 1911
— PART OF THE —
PROVINCE OF ONTARIO
PUBLIC ROADS AND HIGHWAYS COMMISSION
· 1914 ·
REFERENCE
LAKE ONTARIO
LAKE ERIE
LAKE HURON
LAKE SIMCOE
LAKE NIPISSING
GEORGIAN BAY
GEORGIAN BAY ISLANDS NATIONAL PARK
ALGONQUIN PARK
GEORGIAN BAY
MUSKOKA
HALIBURTON
NIPISSING
PARRY SOUND
RENFREW
PETERSBOROUGH
VICTORIA
HASTINGS
PRINCE EDWARD
NORTHUMBERLAND
DURHAM
ONTARIO
LENNOX
ADDINGTON
FRONTENAC
LANARK
LEEDS
GRENVILLE
DUNDAS
STORMONT
GLENGARRY
RUSSELL
CARLETON
OTTAWA
PRESCOTT
DUFFERIN
SIMCOE
YORK
PEEL
WELLINGTON
HALTON
WENTWORTH
WATERLOO
PERTH
HURON
BRUCE
GREY
WENTWORTH
LINCOLN
WELLAND
NORFOLK
HALDIMAND
ELGIN
MIDDLESEX
LAMBTON
KENT
ESSEX
Sault Ste Marie
Sudbury
Copper Cliff
North Bay
Ottawa
Montreal
Kingston
Toronto
Hamilton
Niagara Falls
Buffalo
Rochester
Oswego
Ogdensburg
Brockville
Belleville
Cobourg
Port Hope
Peterborough
Lindsay
Orillia
Barrie
Collingwood
Owen Sound
Meaford
Penetanguishene
Parry Sound
Huntsville
Bracebridge
Gravenhurst
Pembroke
Renfrew
Arnprior
Carleton Place
Almonte
Smiths Falls
Perth
Brockville
Prescott
Hawkesbury
Vankleek Hill
Alexandria
Cornwall
Morrisburg
Iroquois
Brockville
Gananoque
Napanee
Picton
Trenton
Campbellford
Lindsay
Port Perry
Whitby
Oshawa
Bowmanville
Port Hope
Cobourg
Colborne
Brighton
Trenton
Belleville
Deseronto
Tweed
Madoc
Bancroft
Barry's Bay
Whitney
Mattawa
Callander
Powassan
Sturgeon Falls
Cobalt
New Liskeard
Haileybury
Englehart
Kirkland Lake
Timmins
Cochrane
Iroquois Falls
Kapuskasing
Hearst
Longlac
Geraldton
Port Arthur
Fort William
Nipigon
Schreiber
Rossport
Michipicoten
White River
Dubreuilville
Wawa
Blind River
Thessalon
Bruce Mines
Algoma Mills
Garden River
Goulais River
Batchawana
Sault Ste Marie
Desbarats
Echo Bay
Spanish
Massey
Webbwood
Espanola
Sudbury
Copper Cliff
Chelmsford
Capreol
Levack
Onaping
Dowling
Azilda
Chelmsford
Verner
Sturgeon Falls
Cache Bay
Lake Nipissing
North Bay
Callander
Powassan
Trout Creek
Burk's Falls
Sundridge
South River
Magnetawan
Kearney
Emsdale
Novar
Huntsville
Dorset
Minden
Haliburton
Wilberforce
Bancroft
Madoc
Tweed
Eldorado
Actinolite
Flinton
Kaladar
Arden
Harrowsmith
Sharbot Lake
Perth Road
Verona
Westport
Newboro
Portland
Delta
Athens
Lansdowne
Rockport
Gananoque
Brockville
Morrisburg
Iroquois
Prescott
Maitland
Johnstown
Cardinal
Spencerville
Kemptville
Merrickville
Burritts Rapids
Oxford Mills
Vankleek Hill
Hawkesbury
Alfred
Plantagenet
Casselman
Rockland
Embrun
Russell
Metcalfe
Carp
Kinburn
Almonte
Arnprior
Renfrew
Pembroke
Eganville
Barry's Bay
Killaloe
Douglas
Deep River
Chalk River
Petawawa
Mattawa
Temagami
Cobalt
New Liskeard
Haileybury
Englehart
Kirkland Lake
Timmins
Cochrane
Iroquois Falls
Kapuskasing
Hearst
Longlac
Geraldton
Port Arthur
Fort William
Nipigon
Schreiber
Rossport
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Dubreuilville
Wawa
Blind River
Thessalon
Bruce Mines
Algoma Mills
Garden River
Goulais River
Batchawana
Sault Ste Marie
Desbarats
Echo Bay
Spanish
Massey
Webbwood
Espanola
Sudbury
Copper Cliff
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Capreol
Levack
Onaping
Dowling
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Trout Creek
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Huntsville
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Verona
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Newboro
Portland
Delta
Athens
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Rockport
Gananoque
Brockville
Morrisburg
Iroquois
Prescott
Maitland
Johnstown
Cardinal
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Kemptville
Merrickville
Burritts Rapids
Oxford Mills
Vankleek Hill
Hawkesbury
Alfred
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Russell
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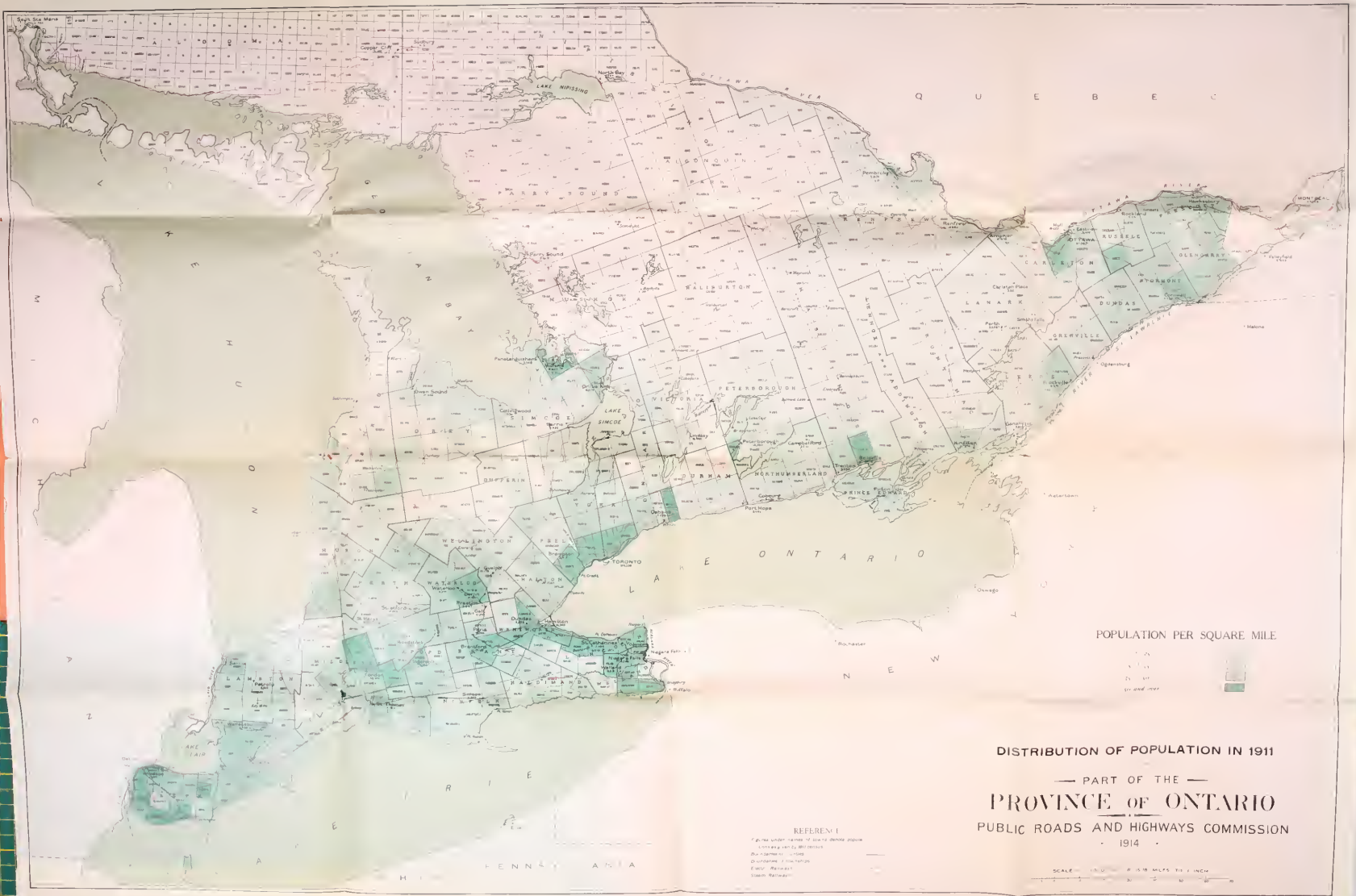
Deep River
Chalk River
Petawawa
Mattawa
Temagami


POPULATION PER SQUARE MILE
DISTRIBUTION OF POPULATION IN 1911
PART OF THE
PROVINCE OF ONTARIO
PUBLIC ROADS AND HIGHWAYS COMMISSION
1914
REFERENCE
LAKE ONTARIO
LAKE SIMCOE
LAKE NIPISSING
QUEBEC
NEW YORK
PENNSYLVANIA
OTTAWA RIVER
ST. LAWRENCE RIVER
ALGONQUIN PARK
HALIBURTON
PETERBOROUGH
NORTHUMBERLAND
DURHAM
PRINCE EDWARD
LANARK
RENFREW
CARLETON
DUNDAS
GLENGARRY
STORMONT
RUSSELL
GREVILLE
PARRY SOUND
MUSKOKA
SIMCOE
DUFFERIN
WELLINGTON
PEEL
HALTON
WENTWORTH
LINCOLN
WELLAND
HALDIMAND
NORFOLK
BRANT
WATERLOO
PERTH
HURON
BRUCE
GREY
DUFFERIN
TORONTO
HAMILTON
OTTAWA
KINGSTON
PETERBOROUGH
NORTH BAY
SUDBURY
COPPER CLIFF
PORT HOPE
BELLEVILLE
BROCKVILLE
PRESCOTT
CORNWALL
ALEXANDRIA
HAWKESBURY
RENFREW
PEMBROKE
ALMONTE
PERTH
SMITHS FALLS
CARLETON PLACE
ARNPRIOR
ORILLIA
BARRIE
COLLINGWOOD
MIDLAND
PENETANGUISHENE
PARRY SOUND
HUNTSVILLE
BRACEBRIDGE
GRAVENHURST
ORILLIA
LINDSAY
PETERBOROUGH
CAMPBELLFORD
TRENTON
PICTON
NAPANEE
COBOURG
PORT HOPE
OSHAWA
WHITBY
AJAX
PICKERING
MARKHAM
RICHMOND HILL
AURORA
NEWMARKET
KING
VAUGHAN
ETOBICOKE
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SCARBOROUGH
MISSISSAUGA
OAKVILLE
BURLINGTON
DUNDAS
HAMILTON
ST. CATHARINES
NIAGARA FALLS
WELLAND
PORT COLBORNE
THOROLD
GRIMSBY
BEAMSVILLE
JORDAN
VINELAND
NIAGARA
QUEENSTON
BRANTFORD
PARIS
GALT
PRESTON
HESPELER
WATERLOO
BERLIN
WOODSTOCK
INGERSOLL
TILLSONBURG
SIMCOE
DELHI
TURKEY POINT
PORT DOVER
DUNNVILLE
CALEDONIA
HAGERSVILLE
CAYUGA
SELKIRK
PORT ROWAN
PORT STANLEY
ST. THOMAS
AYLMER
TILBURY
WALLACEBURG
CHATHAM
DRESDEN
WALLACE
LONDON
STRATHROY
WYOMING
SARNIA
PETROLIA
FOREST
WATFORD
ALVINSTON
PETROLIA
OIL SPRINGS
OWEN SOUND
MEAFORD
THORNBURY
CLARKSBURG
WIARTON
TOBERMORY
SOUTH BAY MINE
COPPER CLIFF
SUDBURY
NORTH BAY
LAKE NIPISSING
OTTAWA RIVER
ST. LAWRENCE RIVER
Rochester
Buffalo
Oswego
Watertown
Massena
Malone
Ogdensburg
Potsdam
Watertown
Adirondack
Mountains
Lake Erie
Lake Ontario
Lake Simcoe
Lake Nipissing
Georgian Bay
Huron
Ontario
New York
Pennsylvania
Quebec
Ottawa River
St. Lawrence River
Niagara River
Niagara Falls
Welland Canal
Rideau Canal
Trent Canal
Muskoka Lakes
Kawartha Lakes
Thousand Islands
Algonquin Park
Haliburton
Peterborough
Northumberland
Durham
Prince Edward
Lanark
Renfrew
Carleton
Dundas
Glengarry
Stormont
Russell
Grenville
Parry Sound
Muskoka
Simcoe
Dufferin
Wellington
Peel
Halton
Wentworth
Lincoln
Welland
Haldimand
Norfolk
Brant
Waterloo
Perth
Huron
Bruce
Grey
Toronto
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Picton
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Cobourg
Port Hope
Oshawa
Whitby
Ajax
Pickering
Markham
Richmond Hill
Aurora
Newmarket
King
Vaughan
Etobicoke
York
Scarborough
Mississauga
Oakville
Burlington
Dundas
Hamilton
St. Catharines
Niagara Falls
Welland
Port Colborne
Thorold
Grimsby
Beamsville
Jordan
Vineland
Niagara
Queenston
Brantford
Paris
Galt
Preston
Hespeler
Waterloo
Berlin
Woodstock
Ingersoll
Tillsonburg
Simcoe
Delhi
Turkey Point
Port Dover
Dunnville
Caledonia
Hagersville
Cayuga
Selkirk
Port Rowan
Port Stanley
St. Thomas
Aylmer
Tilbury
Wallaceburg
Chatham
Dresden
Wallace
London
Strathroy
Wyoming
Sarnia
Petrolia
Forest
Watford
Alvinston
Petrolia
Oil Springs
Owen Sound
Meaford
Thornbury
Clarksburg
Wiarton
Tobermory
South Bay Mine
Copper Cliff
Sudbury
North Bay
Lake Nipissing
Ottawa River
St. Lawrence River
Rochester
Buffalo
Oswego
Watertown
Massena
Malone
Ogdensburg
Potsdam
Watertown
Adirondack
Mountains
Lake Erie
Lake Ontario
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Lake Nipissing
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Ontario
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Welland Canal
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Prince Edward
Lanark
Renfrew
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Dundas
Glengarry
Stormont
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Cobourg
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Oshawa
Whitby
Ajax
Pickering
Markham
Richmond Hill
Aurora
Newmarket
King
Vaughan
Etobicoke
York
Scarborough
Mississauga
Oakville
Burlington
Dundas
Hamilton
St. Catharines
Niagara Falls
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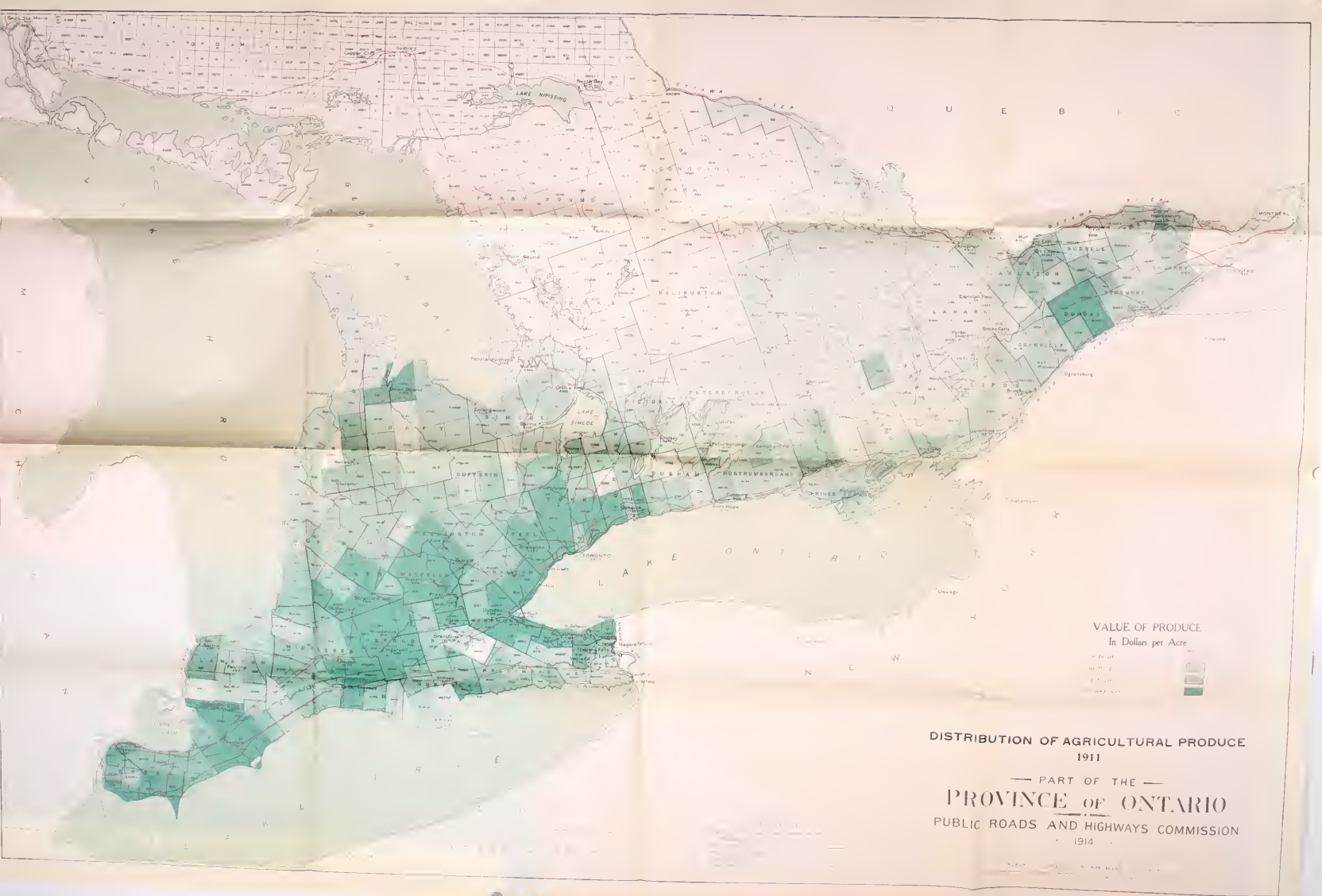
Thorold
Grimsby
Beamsville
Jordan
Vineland
Niagara
Queenston
Brantford
Paris
Galt
Preston
Hespeler
Waterloo
Berlin
Woodstock
Ingersoll
Tillsonburg
Simcoe
Delhi
Turkey Point
Port Dover
Dunnville
Caledonia
Hagersville
Cayuga
Selkirk
Port Rowan
Port Stanley
St. Thomas
Aylmer
Tilbury
Wallaceburg
Chatham
Dresden
Wallace
London
Strathroy
Wyoming
Sarnia
Petrolia
Forest
Watford
Alvinston
Petrolia
Oil Springs
Owen Sound
Meaford
Thornbury
Clarksburg
Wiarton
Tobermory
South Bay Mine
Copper Cliff
Sudbury
North Bay
Lake Nipissing
Ottawa River
St. Lawrence River

Stone on the west shore of


VALUE OF PRODUCE
In Dollars per Acre
DISTRIBUTION OF AGRICULTURAL PRODUCE
1911
— PART OF THE —
PROVINCE OF ONTARIO
PUBLIC ROADS AND HIGHWAYS COMMISSION
1914
LAKE NIPISSING
LAKE SIMCOE
LAKE ONTARIO
QUEBEC
ALGONQUIN PARK
HALIBURTON
PETERBOROUGH
NORTHUMBERLAND
PRINCE EDWARD
DUNDAS
STORMONT
GLENGARRY
RUSSELL
PRESCOTT
GRENVILLE
LANARK
ARNPRIOR
RENFREW
SIMCOE
DUFFERIN
PEEL
HALTON
WENTWORTH
WATERLOO
WELLINGTON
GREY
BRUCE
HURON
PERTH
OXFORD
MIDDLESEX
ELGIN
NORFOLK
HASTINGS
PRINCE
TORONTO
MONTREAL

NOTE

If each of the centers of population were to continue its purchases of Canadian grown food in its immediate vicinity, the area required for its support would be unbelievably small.

REFERENCE

Figures under names of cities denote population as given by Bulletin No. 1

Boundaries of counties

Boundaries of townships

Electric Railways

Steam Railways

URBAN SUPPORTING AREAS

— PART OF THE —

PROVINCE OF ONTARIO

PUBLIC ROADS AND HIGHWAYS COMMISSION

— 1914 —

SCALE — INCH = 20 MILES TO 1 INCH

INCREASES AND DECREASES
OF
AGRICULTURAL PRODUCTS
1901-1911

— PART OF THE —

PROVINCE OF ONTARIO

PUBLIC ROADS AND HIGHWAYS COMMISSION

— 1914 —

INCREASES
In Dollars per Acre

- 1 to 5
- 5 to 10
- 10 and over

DECREASES
In Dollars per Acre

- 0 to 5
- 5 and over

REFERENCE

Figures under names of towns denote popula-
tion as given by Bell census

Boundaries of counties
Boundaries of townships
Electric Railways
Steam Railways

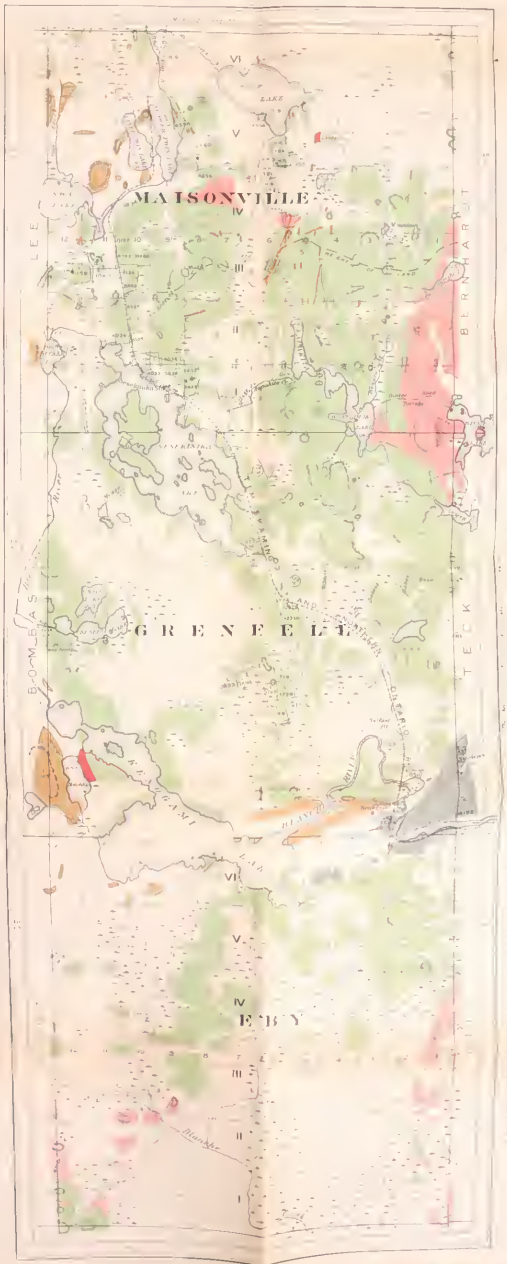
SCALE — 1 1,000,000 OR 15.78 MILES TO 1 INCH

0 5 10 20 30 40 50 60 70

T. MACAULAY LITH. TORONTO

PROVINCE OF ONTARIO

MAISONVILLE, GRENFELL AND EBY



LEGEND

Glacial and Recent

Stratified clay and sand, boulder clay, gravel

PRE CAMBRIAN

Diabase dikes

INTRUSIVE CONTACT

Cobalt Series

Conglomerate, quartzite, slate and greywacke

GREAT UNCONFORMITY

Post-Temiskaming intrusives

Acid quartz-feldspar porphyry

Basalt, hornblende syenite with some granular intrusives

Gabbro and syenite

IGNEOUS CONTACT

Temiskaming Series

Quartz and feldspar porphyry, conglomerate, arkose, basalt, slate

UNCONFORMITY

Keewatin

Greenstones, schists, basalt, diabase

SIGNS

Swamp

Elevation in feet above sea level

Boulders

SOURCES OF INFORMATION

Township and outline plans ... Survey Branch, Department ... Toronto, Ontario, and Ottawa, Ontario.

Maps ... Geological Survey ... Report ... 1901 (Reprint, Toronto, 1905) ... Report ... 1901 (Reprint, Toronto, 1905) ... Report ... 1901 (Reprint, Toronto, 1905)

BINDING SECT. AUG 2 5 1967